

December 1939

TECHNOLOGY REVIEW

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THE TABULAR VIEW

THROUGH the interest of a friend of the Institute who has for some years carried on correspondence with members of the Pitcairn Island colony, *The Review* this month offers a document which, slight in itself and in its ultimate importance, is nonetheless of particular interest. DAVID A. YOUNG's account of life as it is lived by descendants of the mutineers of H.M.S. *Bounty* (page 63) has the odd claim to attention possessed by all statements of simple and direct observation by people whose remoteness from the usual concerns of the times may be expected to give their views freshness and honesty, whether or not it contributes to their substantiality.

MORE remote than Pitcairn Island, and far busier, is the unseen world the exploration of which is discussed this month (page 65) by ARTHUR R. VON HIPPEL, Assistant Professor in the Institute's Department of Electrical Engineering. Dr. von Hippel, who is in charge of the insulation research laboratory which links his Department with the Department of Physics, describes investigations aiming to resolve some of the problems encountered in insulation and employing basic research into the internal structure of matter. Study of electronic and ionic conduction through solids and of the electrical breakdown of insulators — with which Dr. von Hippel became associated some years ago at the University of Göttingen — has resulted in the development at Technology of highly ingenious methods and applications of apparatus, some of which are discussed in Dr. von Hippel's paper. The research program itself is of interest from the point of view of its illustration of co-operation among departments and disciplines possible in an institution such as Technology, where methods and materials, as well as attitudes and approaches, from half a dozen branches of science are collaboratively focused in the effort to solve a major problem.

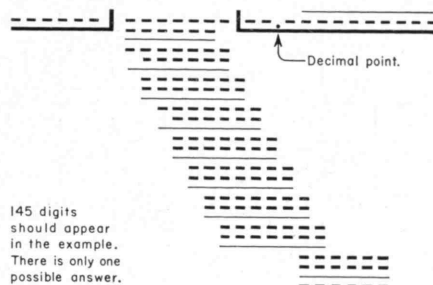
HALLET is an artist in everything he does," said Kenneth Roberts in connection with *Michael Beam*, the current historical novel by RICHARD HALLET, who, already known to Review readers for an article on Australia in our issue of last May, describes graphically in this month's number (page 68) a kind of nautical engineering with which few laymen have even slight, not to mention firsthand, acquaintance. His observations during a workaday cruise with a lighthouse tender along the coast should provide not a few vicarious shivers for readers allergic to the oncoming of winter.

VARIOUS aspects of the Institute's operations are reported in the Institute Gazette this month, affording a bird's-eye view of administrative policy and practice and an understanding of the matter-of-fact issues presented in the conduct of educational institutions during times of world-wide stress. Enrollment, finance, and long-range administrative procedure are summarized in the reports presented.

No. 20

Just for Fun! A CHALLENGE TO YOUR INGENUITY

IN this skeleton division, each — represents a digit. The 9 quotient digits under the line form a repeating decimal (i.e., the group as a whole repeats indefinitely). Divisor and dividend have no common factor. Find the digits.



See *The American Mathematical Monthly*, May, 1922, page 211, for methods of solving this fine puzzle by Professor Shuh, of Delft.

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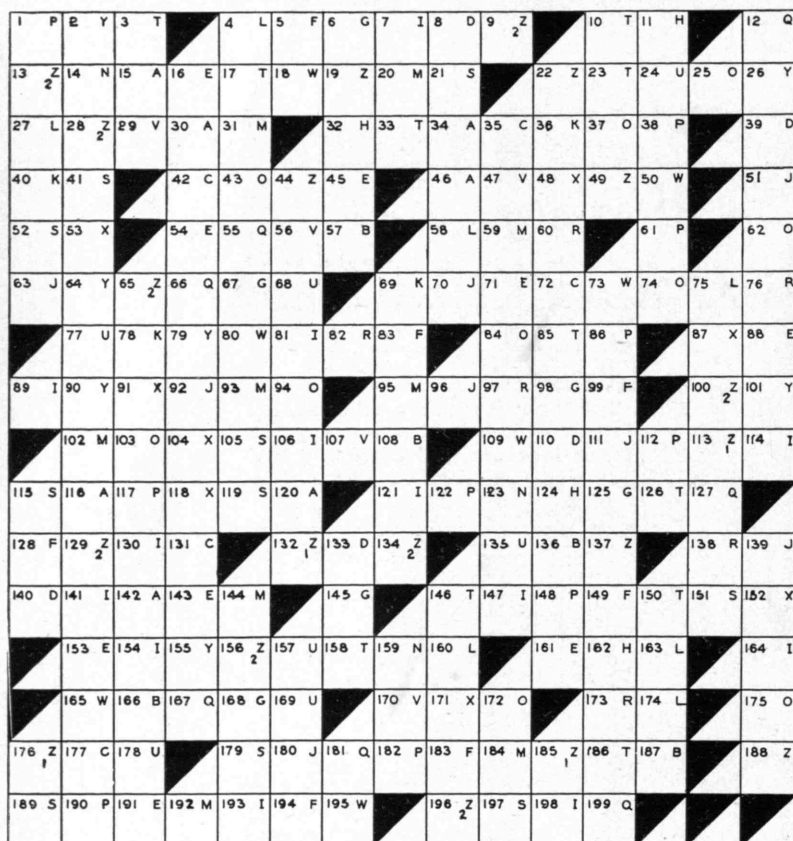
FROM "HEURISTICUS":

The accompanying Double-Crostic may interest Review readers. From Elizabeth Kingsley's *Double-Crostics*, published by Simon and Schuster, I transmit these instructions for attacking such puzzles:

"A Double-Crostic resembles a Cross-Word puzzle only in a list of definitions of words to be utilized and in a box of squares in which to insert these. The words are not an end in themselves, but a means to an end. The letters of the words are inserted in the diagram in scattered, not consecutive order [i.e., each letter is transferred to the correspondingly numbered square on the diagram]. When filled into the proper spaces the letters make an alignment of new words forming a quotation which is read from left to right. Each black area represents the end of a word in the quotation. Words do not necessarily end at the right side of the diagram.

"Further, the initial letters of the words guessed, when placed in vertical order under WORDS, spell the name of the writer [of the quotation] and the person to whom it is written. The whole name of the author may be given, or only his surname, or his initials with surname. In every case the word TO divides the name of the writer from that of the recipient. In the upper right-hand corner of each square is a small index-letter. This index-letter corresponds to the letter under DEFINITIONS in which the quotation-numeral belongs."

Note: The solution to this puzzle will appear in our next issue.



DEFINITIONS (each dash represents one letter in the required word)

- A. Element of beauty in Gothic windows.
- B. To incite to pursuit.
- C. Shaped like an egg.
- D. Large parrot with brilliant plumage.
- E. Brings swift medical aid.
- F. President of well-known university.
- G. An island possession.
- H. To puff; to blow.
- I. Without reservation; absolute.
- J. Led and described a famous march.
- K. To praise.
- L. An abstract.
- M. Instrument for measuring length.
- N. A twitching.
- O. A process of making steel (two words).
- P. Philosopher; founder of religious brotherhood (582-507? B.C.).
- Q. He knew his Gettysburg address.
- R. An extremely taciturn person (slang).
- S. Illogical; misleading.
- T. A type of amplifier.
- U. Musical instrument; a kind of firework; a reptile.
- V. A quadrant-shaped teacake.
- W. Name of a popular complex.
- X. A factory producing cords of twisted or braided strands.
- Y. Sent away; got rid of (colloquial).
- Z. To bring to pass.
- 1Z. Evergreen tree of New Zealand.
- 2Z. Serving to stimulate investigation.

WORDS (words and quotation, worked together, are mutually helpful)

142 30 46 116 15 34 120

57 136 166 187 108

42 177 35 72 131

110 133 8 140 39

191 54 161 88 143 153 16 71 45

99 83 194 128 183 149 5

168 67 98 145 6 125

124 162 11 32

154 7 141 147 121 89 164 114 106 81 130 193 198

139 70 92 180 111 51 63 96

69 40 78 36

75 4 27 163 174 58 160

144 59 102 192 31 184 20 93 95

123 14 159

25 62 103 43 84 94 37 74 172 175

148 38 1 112 117 182 122 190 61 86

181 55 127 167 66 199 12

97 60 82 173 138 76

179 189 105 119 151 21 115 52 197 41

3 23 146 10 126 186 158 17 85 33 150

77 178 68 24 157 135 169

47 56 29 170 107

165 109 50 18 80 73 195

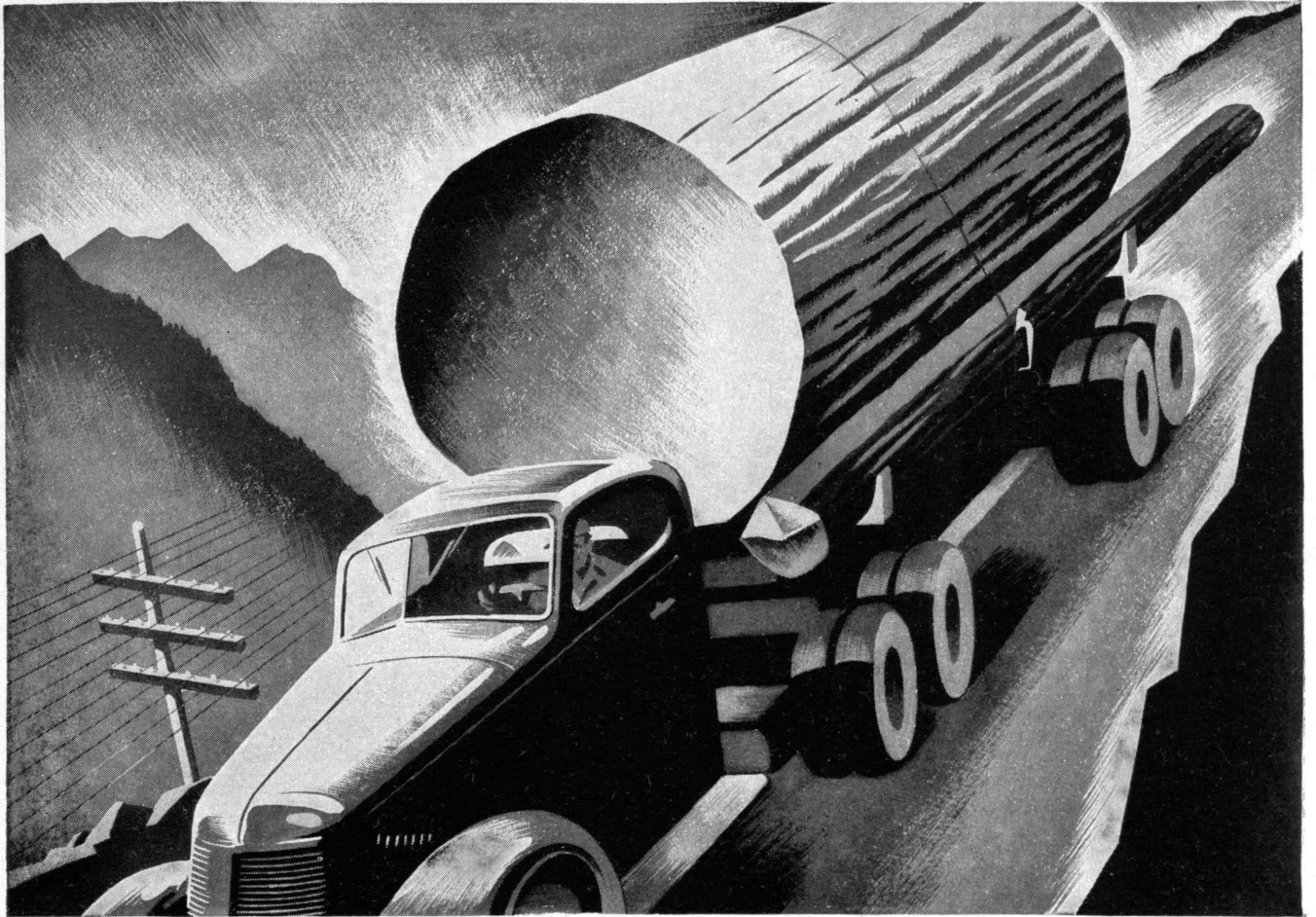
152 171 104 91 53 87 118 48

26 2 90 64 79 101 155

49 19 188 22 44 137

185 176 132 113

100 9 65 196 156 134 28 129 13



SOLVING THE HARD ONES

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Holding back 50 ton loads on long, steep grades and running high temperatures is all in their day's work. But, by making his drums of Chromium-Molybdenum (0.35-0.45% Cr.; 0.35-0.45% Mo.) iron, one of the leading manufacturers has more than met the severe operating conditions.

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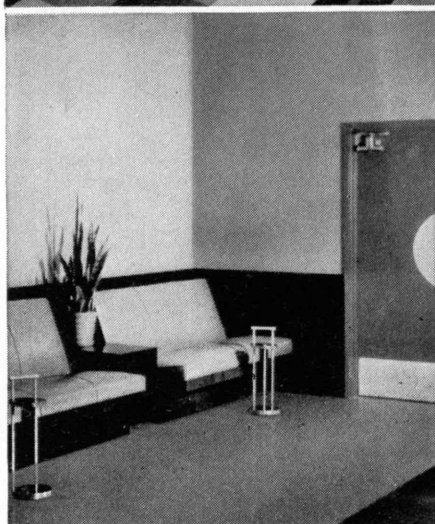
A lasting Beauty Treatment for walls and floors

MODERN architects are turning more and more to rubber for their smartest and most colorful effects in floor and wall design. In Goodyear Wingfoot Rubber Flooring and Wall Rubber they have found a new medium of great warmth and richness, limitless in color and pattern with an enduring beauty that will neither "walk" off nor wash off.

Underfoot, resilient Goodyear rubber floors give incomparable quietness and foot-ease. In hospitals, schools, libraries and offices they hush the tread of busy feet. In homes, apartments and hotel public rooms their handsome luxury makes rugs unnecessary—yet they cost no more than linoleum.

Walls paneled with Goodyear rubber offer exciting new possibilities in decorative treatments of refreshing distinction and appeal. The rare beauty and superb wearing qualities compounded into these two versatile new products are one more measure of Goodyear's preeminence as the greatest name in rubber.

Wingfoot — T. M. The Goodyear Tire & Rubber Company.



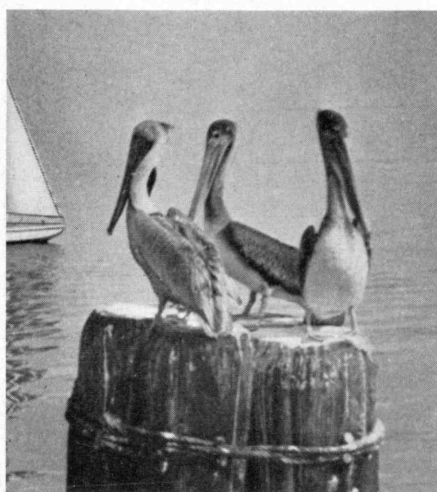
Infinite is the variety of modern floor and wall patterns available with Goodyear Wingfoot Flooring and Wall Rubber as these two smart designs illustrate.



1839 • THE CENTENNIAL OF RUBBER • 1939

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GOODYEAR



Sail ho!
That so?
Who cares!
Pelicans at St.
Petersburg, Fla.

W. W. Lewis, '89

THE TECHNOLOGY REVIEW

Title Reg. U. S. Pat. Office

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VOL. 42, NO. 2

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From a photograph by William M. Rittase, by special arrangement with the International Salt Company

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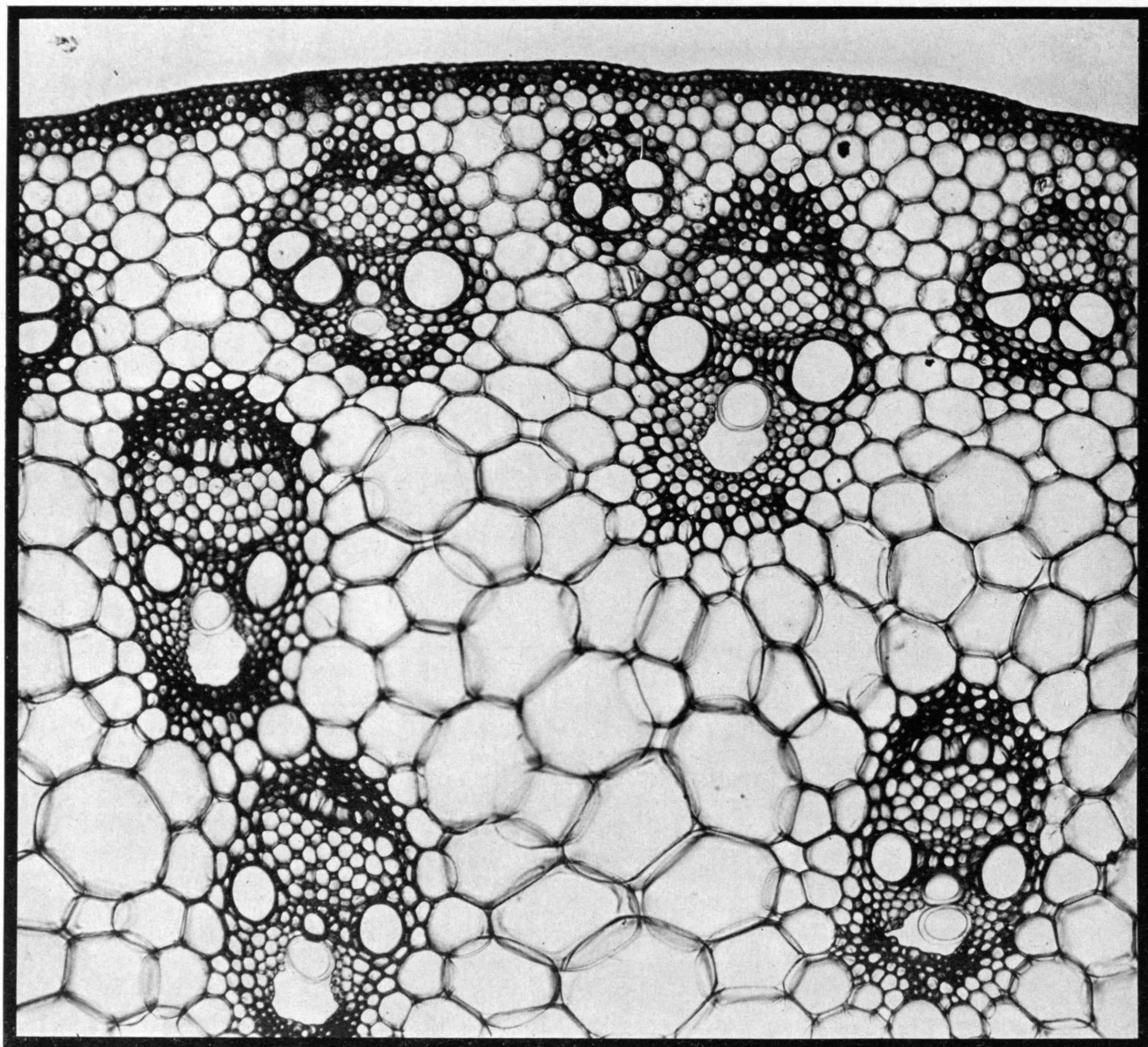
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Photomicrograph, x170, of transverse section of corn stem by R. W. St. Clair, '36

*These mellow singers
In a cornstalk hid —
They did, they did.*

*Remote and merry,
They hoarded up their song —
'Twas wrong, 'twas wrong.*

*So lamps and lenses
Here have brought them out
To sing, to shout*

*In a photomicrographic minstrel show:
Thanks to the artfulness in x 170.*

THE TECHNOLOGY REVIEW

Vol. 42, No. 2



December, 1939

The Trend of Affairs

Tanks for Testing

THROUGH many press reports, public attention has recently been focused on the United States Navy's new David W. Taylor Model Basin now nearing completion at Carderock, Md., in a gorge of the Potomac some twelve miles from Washington. These stories usually lay stress on the size of the project (the main building is one-quarter mile long) or on the precision with which the rails for the towing carriages are aligned to the curvature of the earth. Yet it is not on either of these aspects that the principal claims to distinction for this development may be rested.

The Hamburg tank, for example, is to all intents and purposes as long. Moreover, at Langley Field back in 1931 the National Advisory Committee for Aeronautics in order to test seaplane floats constructed a towing tank which stretches 2,000 feet, as against the 1,168 feet of the longest of the new navy basins. This same Langley Field tank, moreover, has its rails aligned to the earth's curvature, although on a different basis.

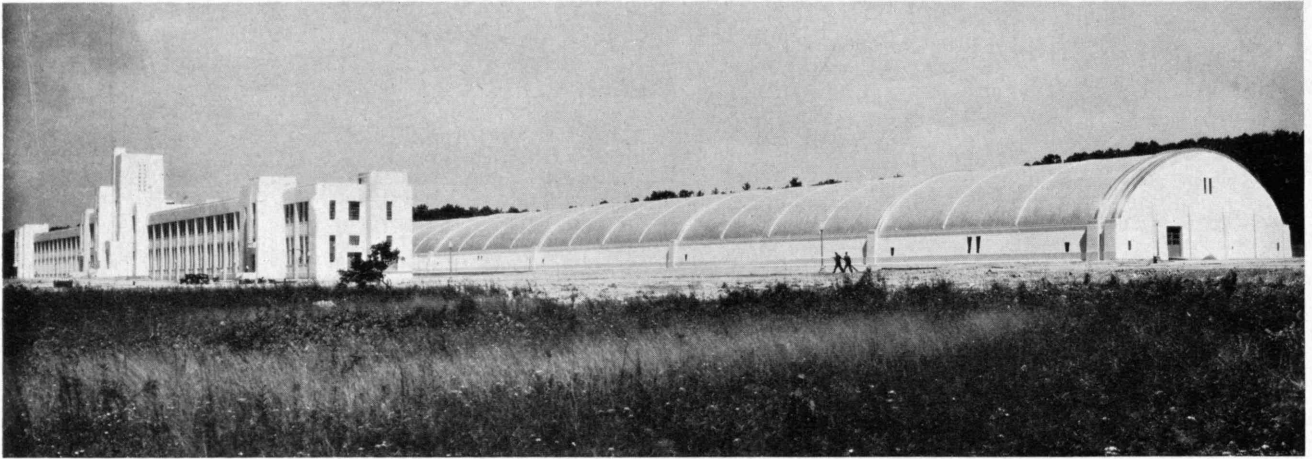
Elsewhere lie the true significances of the splendid new basin which is being constructed under the direction of Harold E. Saunders, '16, technical director of the United States Experimental Model Basin at Washington. To understand them, a search in the past history of ship design is necessary.

It is hard to realize that only a hundred years ago, despite the tremendous progress which had been made in ship design, the makers of new vessels were able to rely only on the results of trial and the service performance of previous similar ships. As so often happens, the great forward step is credited to one individual: William Froude, the father of modern naval architecture. Born in Devon in 1810, graduate of Oxford, sometime assistant to the great Brunel, Froude began his serious work through experiments with models in the river Dart,

contriving with tin and solder delicate and accurate recording apparatus. In model experiments in a creek off Dartmouth Harbor, he towed the models in pairs on each side of a balanced yard beam; in a large storage tank at the top of his house he towed the model with falling weights, a practice still followed for resistance experiments in some of the smaller tanks.

In 1860 the founding of the Institute of Naval Architects gave Froude opportunity to publish his important research. The Admiralty, in 1870, granted him 2,000 pounds for the construction of a tank having suitable towing and recording apparatus. The first tank in this country was built in 1899. By 1910 — one hundred years after Froude's birth — there were four tanks in the yards of British shipbuilders, and the national tank in Great Britain had been opened as part of the National Physical Laboratory and had been named for Froude. In 1912 an important Viennese tank was begun, to be completed in 1916 and to serve as model for Japan, Moscow, Trondheim, Göteborg, Madrid, Rome, La Spezia, and Holland. By July, 1933, the art was sufficiently developed for the first international congress of tank experimenters to be held at The Hague, with Germany, Norway, United States, Italy, Sweden, England, France, Austria, Russia, Japan, and Holland represented. The tanks thus represented nearly a century after Froude's first experiments, embody his principle.

This method provides still-water tows of models at successively constant speeds through the use of carriages spanning the tank while measuring the pull and the trim of the craft, or, if it is of fixed trim, the moment required to hold this trim. Four factors are required for precision: exact models with uniform nondeteriorating surfaces, accuracy of dynamometers, constant speed of the towing carriages, and control of the basin-water characteristics. It is in the latter two factors that improvement may be expected with newly designed tanks.



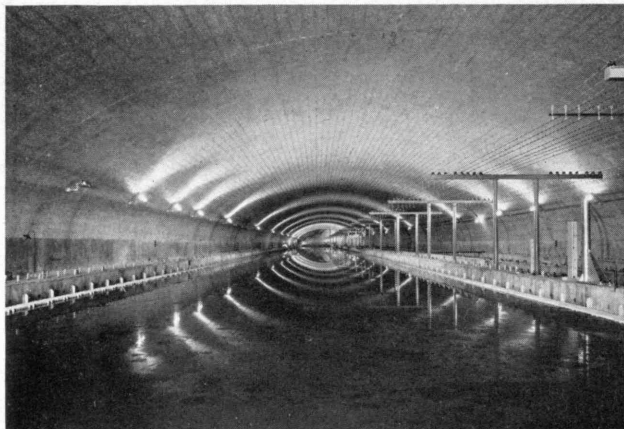
The building group, David W. Taylor Model Basin, Carderock, Md.

As a result of these measurements and the necessary conversions from model to full scale, it is possible to investigate such matters as skin friction, economies in ship propulsion, propeller behavior. More controversial among experts is the question of studying the effect of artificially stimulated wave motions.

The old basin at Washington was brought into being through the efforts of David Watson Taylor, rear admiral and former chief constructor of the Navy and — for the first fifteen years of the tank's existence — officer in charge of the experimental model basin. Admiral Taylor was born in Virginia in 1864, just as Froude's experiments were being published, and he was graduated from Annapolis with the highest record made to that date, 1885. Fourteen years later, he had constructed the experimental model basin at Washington. A subsequent career of distinguished service to his country has more than justified the honor conferred in naming the new laboratories for him.

Forty years of service have rendered the present tank inadequate and almost obsolete. In size it is but 400 feet by 39 feet, and it is operating 16 hours a day to keep pace with the requirements of current naval and merchant-ship programs. Rebuilding the tank was out of the question, both because the all-important foundations might have been insecure and because there was not enough adjacent room; hence the construction of a new basin was provided for in Congressional appropriations of 1936, 1937, and 1938.

To the designers the principal requirements of the new plant were seen to be: (1) a firm and unyielding foundation, preferably of bedrock, to permit the accurate track level and alignment which were needed; (2) a group of individual model basins for specific work rather than a portmanteau basin; (3) lengths of basin sufficient to permit towing at a constant velocity for at least eight



Inside, looking west, showing the large basin

seconds, and breadths and depths such as to eliminate wall and bottom interference for models which might be towed at speed-length ratios higher than those now employed; (4) facilities for fundamental research and for expansion (since the future fundamental research requirements could not even be guessed at, utmost flexibility was sought and expansion of each division of the basin is possible); (5) convenience of the site as

respects transportation, water supply, quiet, cleanliness. This factor, with the first, governed the selection of Carderock as the location for the basins.

To meet the second and third requirements, three major basins are provided. Longest of these is the high-speed basin, 1,168 feet long, 21 feet wide, and 10 feet deep, for the testing of motorboats and other high-speed craft. This basin was originally projected to be 1,600 feet long. Such a length would have permitted a carriage speed of 30 knots. Reduced appropriations shortened the length to the present dimension and lowered carriage speed to 20 knots, which, however, for a 10-foot model of a 100-foot ship will still be the equivalent of a ship speed of 62 knots.

Largest of the basins is 963 feet long, 51 feet wide, and 22 feet deep, for testing ship models. This is separated by a caisson from a shallow basin of the same width, 303-foot length, and 10-foot depth. The top water level of these two basins is the same, so that at times one longer, wide basin can be provided by opening the caisson.

Shallow basins elsewhere, used principally for testing tugboats, river craft, and the like, have false bottoms for changing water level. These yield and leak. In the new navy laboratory the water level itself will be raised and lowered, even though doing so requires a model-towing device which can be lowered to different water levels. The high-speed basin runs parallel to the deep

and shallow basins, and both are housed under one great arch-shaped concrete shed. The shallow basin in turn leads into a J-shaped turning basin wherein it is possible to test self-propelled models after bringing them up to speed with the towing carriage of the shallow tank. This J-shaped turning tank is housed in a rectangular building.

The roofs of the vault and the rectangular building adjoining it are insulated; the buildings are ventilated and heated by a series of ventilating units and steam heaters along the sides. To improve thermostatic and photographic control, to increase the ease of keeping water clean, and to retard marine growths, sunlight is kept out of both buildings; neither has any windows. Thus these are remarkable for government buildings: functional in architecture. They have, incidentally, won first prize for their architecture in a recent competition among Federal architects.

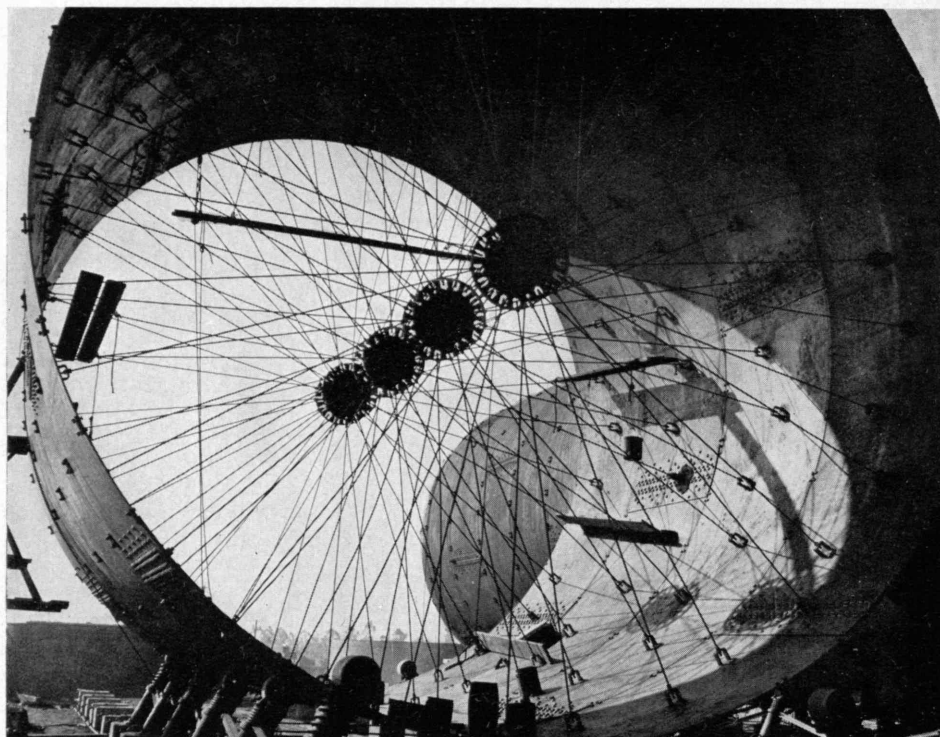
Perhaps the greatest precision required in a towing tank is the alignment of the rails on which the towing carriages run. There are three such carriages in the present basin, one for each tank. It is permissible for a carriage to vary from the selected speed by only one to two one-hundredths of a knot at most. The track must be, therefore, within a few thousandths of an inch of alignment to the curvature of the earth in order to eliminate gravity effects. If aligned by sighting optically, a track would have about one-quarter inch of error in a thousand feet; hence this one will be made to follow the earth's curvature by being oriented to the water level in the basins themselves. This trick is not new, but another one used in the new structure is: The designers have felt that by placing the center of gravity of the carriages near to one rail, it might be possible to concentrate the alignment technique on that one rail, so to speak; and that by concentration of as much care on one rail as had previously been spent on two, a greater precision might be obtained. This plan has required a very heavy (165-pound) rail for the primary rail, whereas the steadying rail on the other side of the tank is lighter (100 pounds).

Adoption of this procedure leads naturally to a towing carriage which is shaped like an isosceles triangle in plan, carrying four wheels at its base on the primary rail and two wheels at its apex on the steadying rail. Another novelty is in the drive of the carriages. Driving wheels are motivated by an electrohydraulic transmission by which direct-connected oil motors are furnished oil through pumps motivated by synchronous motors which, in turn, derive their stimulus from an overhead trolley.

Another important problem in a tank is control of the basin-water characteristics. The new tanks, therefore, have lateral wave absorbers in the form of U-shaped steel troughs of rectangular section just slightly submerged, while at the finishing end of the deep-water basin is a parabolic beach of concrete also for wave absorption. The big basins will not be provided with wave-making apparatus at present, as artificial waves made so far do not seem to duplicate natural waves, and for this reason some doubt has been cast on the validity of tests in this environment. The designers feel that wave-making apparatus can be installed later if it should seem desirable.



A beach in Westport, Mass. — M. Zelda Howes



Sunlight netted and caught within a horizontal high-pressure gas holder, 32 feet by 215 feet, under construction in California

Leonard from Petroleum World

As previously mentioned, experimental tanks may sometimes be found at shipbuilding yards. In Britain, for example, such firms as Denny and Brothers, Vickers, and John Brown and Company, Ltd., at Clydebank all have tanks. Some idea of the magnitude of testing required in the design of a great modern ship may be gleaned from the experience with the S.S. *Queen Mary* and the S.S. *Queen Elizabeth*, essentially sister ships. Though on the former over 7,000 model experiments were performed, substantially more had to be made with the *Elizabeth* to care for relatively minor changes in design.

It is evident that in eras of shipbuilding activity the large number of routine tests will tend to slow up fundamental research. In this country, though there are small tanks at a number of universities, principal reliance both for naval and mercantile design will be laid on the new Taylor Basin, which, moreover, offers the only opportunity here for testing self-propelled models. Recognizing the pressure which this situation may cause, the Navy has wisely provided an additional smaller tank for fundamental research at the Taylor Basin, so that even in times of great building activity the lifeblood of advanced ship design need not be too diluted.

The concrete basins are poured and joined; the roof is on; the rails are now being laid. It is hoped that first tests in the tanks may be made next summer and that by January 1, 1941, the basin may be opened as intended for commercial, as well as for naval, testing.

Voice Power

THE human voice has been put to work. A new type of telephone, announced recently by Western Electric Company, operates on an electric current developed by the power of the voice as it enters the transmitter. The new system is reported to be reliable and has been

tested with effective results over a distance of 200 miles. However, it was designed for short-range transmission and finds most promising application on board ship, where electric power failures may cut off intercommunication between various operating departments.

As designed for shipboard use, the new voice-powered instruments are arranged in networks of six stations, any one of which may call any other. Ringing current for signaling various stations is developed in a hand-operated generator. The watertight, weather-resistant construction of these instruments makes them applicable also for use in camps, factories, and similar small communities.

A Prophet in His Own Country

THE world applauds the award of the 1939 Nobel Prize in medicine and physiology to Dr. Gerhard Domagk for his discovery of the therapeutic action of prontosil. The world deplores the fact that the ordinances of the nation to which he is subject are such that he is forbidden to accept it.

Domagk on February 15, 1935, announced the primary discovery that the red-colored azodyestuff, prontosil, is a specific for certain streptococcal infections. Others later discovered that the efficacy of prontosil inheres in but part of its molecule. Sulfanilamide, the simpler substance upon the molecule of which the more complicated molecule of prontosil is built up, is equally effective. That sulfanilamide destroys not only streptococcal infections but coccal infections of many kinds, including those caused by the staphylococcus, the gonococcus, the meningococcus, the pneumococcus, was also discovered. There now seems to be real hope — more than hope, a definite probability — that dangerous mastoid operations will no longer be necessary, that

meningitis can be cured promptly, that gonorrhea will vanish from the earth. Sulfapyridine, a simple derivative of sulfanilamide, is more effective than the latter for pneumonia of certain types and is at present accomplishing authentic miracles, not supernatural but truly marvelous and greatly to be admired.

The prize which Domagk has been forbidden to accept is, however, more than recognition of his chemical achievement as such. The Nobel Prize in medicine and physiology was instituted by a great lover of peace and of the peaceful pursuits of peacetime; it is a prize for the commemoration of humanly valuable accomplishment. The ban on its acceptance, then, is a ban not only on recognition of scientific activity in itself but also on recognition of the transcendent value in the humanitarian aspects of science.

Nobel loved peace. In a letter which he wrote in January, 1893, to Bertha von Suttner (who had much to do with the establishing of The Hague Tribunal), he said: "I should like to allot part of my fortune to the formation of a prize fund to be distributed in every period of five years (we may say six times, for if we have failed at the end of thirty years in reforming the present system we shall inevitably revert to barbarism). This prize would be awarded to the man or woman who had done most to advance the idea of general peace in Europe. I do not refer to disarmament which can be achieved only by very slow degrees. I do not even necessarily refer to compulsory arbitration between nations; but what I have in view is that we should soon achieve the result — undoubtedly a practical one — that all states should bind themselves absolutely to take action against the first aggressor. Wars will then become impossible, and we should succeed in compelling even the most quarrelsome state either to have recourse to a tribunal or to remain quiet. If the Triple Alliance instead of comprising three states were to secure the adherence of all, secular peace would be insured for the world."

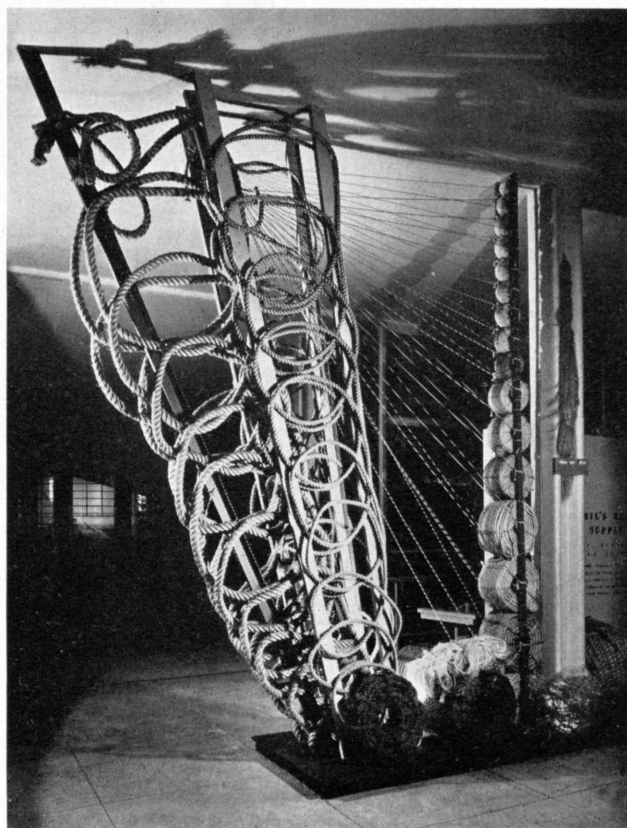
Nearly three years after this advocacy of a league of nations which would have teeth — or of peace enforced by means strong enough to maintain it — in his will dated November 27, 1895, Nobel brought into specific form the general idea of the peace award which had been in his mind when he wrote to Bertha von Suttner. The will declares: "With the residue of my convertible estate I hereby direct my Executors to proceed as follows: They shall convert my said residue of property into money, which they shall then invest in safe securities; the capital thus secured shall constitute a fund, the interest accruing from which shall be annually awarded in prizes to those persons who shall have contributed most materially to benefit mankind during the year immediately preceding. The said interest shall be divided into five equal amounts, to be apportioned as follows: One share to the person who shall have made the most important discovery or invention in the domain of Physics; one share to the person who shall have made the most important Chemical discovery or improvement; one share to the person who shall have made the most important discovery in the domain of Physiology or Medicine; one share to the person who shall have produced in the field of Literature the most distinguished work of an idealistic tendency; and, finally, one share to the person

who shall have most or best promoted the Fraternity of Nations and the Abolishment or Diminution of Standing Armies and the Formation and Increase of Peace Congresses. The prizes for Physics and Chemistry shall be awarded by the Swedish Academy of Science in Stockholm; the one for Physiology or Medicine by the Caroline Medical Institute in Stockholm; the prize for Literature by the Academy in Stockholm and that for Peace by a Committee of five persons to be elected by the Norwegian Storting. I declare it to be my express desire that, in the awarding of prizes, no consideration whatever be paid to the nationality of the candidates, that is to say, that the most deserving be awarded the prize, whether of Scandinavian origin or not."

The Nobel Prize — for whatever accomplishment it is awarded, by persons of discernment — is a public acknowledgment of the profound human value of the attainment for which the prize is given. To know is humanly valuable. To attain wisdom out of knowledge is humanly more valuable. And surely to recognize the value of knowledge, whether the knowledge be useful or useless for worldly purposes and merely provocative of inner tranquillity, is the beginning of wisdom.

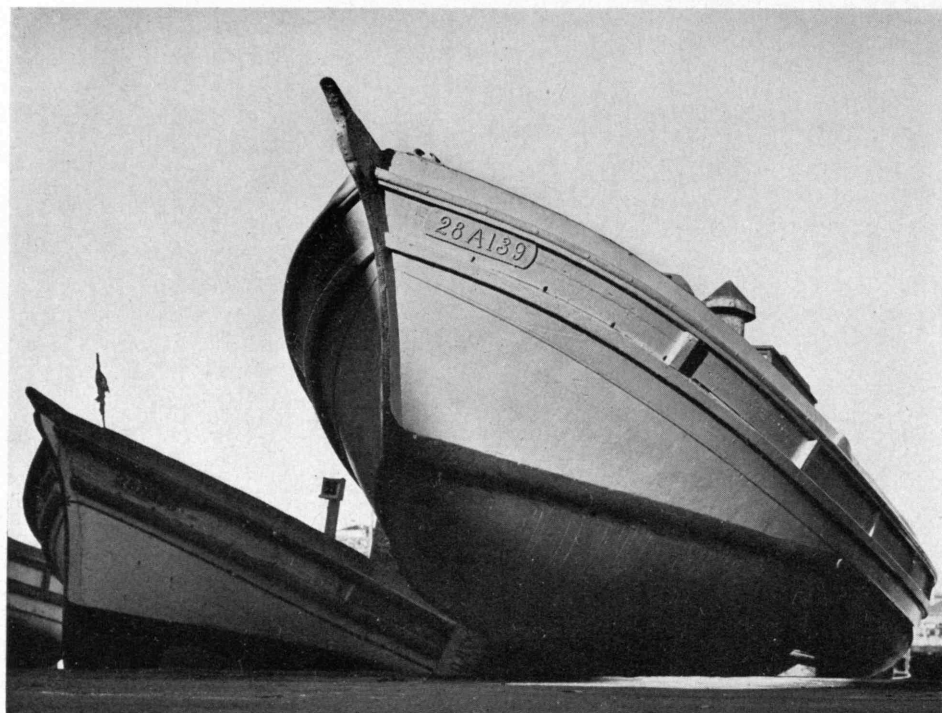
Reflections Upon the Psychodynamics of Chewing

WE experienced an unexpected degree of relaxation lately upon reading in *Science* an impressively technical article bearing the title "Chewing as a Technique of Relaxation." Here, in the emotionless and



F. S. Lincoln, '22

Rope and its raw material displayed by Brazil at the New York World's Fair



Silhouette: detail of the typical, speedy boats used by San Francisco's Italian fishermen

Raymond B. Collier, '20

objective measures of a laboratory report, was a charming touch of nature that transmuted figures into tropes, and precision of measurement into metaphor. Here was Science in all its precise and meticulous dignity and clothed in its panoply of experimental method, casting a sly but rigorous glance of approbation toward a frailty we have been taught to eschew. With nothing but a cracked pipestem to chew upon, and further restricted by a purely personal distaste for masticatories of the confectioned-chicle variety, we were tempted to celebrate our release from another inhibition by ordering a plug of Micky Twist or Brown's Mule. With its subtle and scientifically demonstrated aid, redolent of a harder day, we could take up relaxation in earnest.

In thus reporting our relaxed reflections we cast no aspersions upon a sober and able article which deserves better than to have prompted them. In his paper Professor Hollingworth concludes from extensive tests that "the collateral motor automatism involved in the sustained use of the conventional masticatory [chewing gum] does result in a lowering of tension, and the tension thus reduced is muscular. In a sense this is only a confirmation of the testimony of the chronic pipe smoker, whistler, gum chewer and watch chain twiddler." "Perhaps these results," Professor Hollingworth further notes, "also throw some light on the striking fact that during the past ten or more 'tense' years the chicle processors have enjoyed their greatest prosperity. . . . The primary function of chewing is of course the mastication of food. Eating is ordinarily a more or less 'quiet' occupation. When we eat we sit; random restlessness is at a low point; we rest; we relax; and the general feeling tone is likely to be one of agreeableness and satisfaction.

"An important item of the eating situation is chewing. It may well enough be that chewing, as a 'conditioned stimulus,' brings with it, whenever it is sustained, a posture of relaxation."

Henceforth when we are beset with random restlessness or catch ourselves fiddling under the strain of the war of nerves, we plan to try some of this inexpensive relaxation therapy. Maybe Wrigley or Beechnut or Brown's Mule, through the psychodynamics of chewing, holds a key to the more serene life.

Air for Dugouts

WITH the present imminence of air raids in London, one of the most important engineering projects there is concerned with the provision and maintenance of gasproof bomb shelters. Taking up again where it left off at the close of the last war, the trend seems to be toward the use of air compressors to supply filtered air for the protection of civilians and soldiers in the dugouts.

When large numbers of persons are crowded together in the shelters, the fans used in the past have been overtaxed in supplying sufficient filtered air. The problem is one of air friction which grows with increasing numbers of people. Compressed-air systems promise a solution for the problem.

The best air filter known is charcoal, which has the ability to absorb large amounts of gas. Charcoal made from coconut shells has been found to be much more effective than that from lightwoods, since, because of the nature of its particles, a gram of it has about 2,990 square yards of absorbing surface.

"Of Making Many Books . . ."

WITHOUT completing Ecclesiastes' familiarly dour comment, there is food for thought in final figures from the Department of Commerce, showing that over one hundred and ninety-three million books were manufactured in this country in 1937, the most recent year for which a census of manufactures has been

published. The total of 193,342,560, which is the greatest since 1929's high of over two hundred and thirty-five million volumes, exceeds by 37 per cent the 1935 total of 140,651,953, and by 74.5 per cent the 110,789,913 volumes printed in 1933.

In 1931, 154,461,622 volumes were published; hence the pronounced slump in the 1933 figure may be taken as indicating that the low point of the depression was reached during the period between 1931 and 1935. The upswing recorded for 1935 continued in 1937, both in the total number of books published, and in the totals for most of the classes into which the department groups books according to their subject matter. Three of these classes, however, had not in 1937 regained their 1931 status. Books on fine arts totaled 694,163 in 1937, 4 per cent under the 1931 figure; books of poetry and drama, 1,788,541 in 1937, 30 per cent under 1931; books on religion and philosophy, 6,944,102 in 1937, 41 per cent under 1931. Fine-arts titles and titles in religion and philosophy reached their low point in 1935, with totals for that year of 165,903 and 6,047,676, respectively. Bibles and Testaments and titles in history also were fewer in 1935 than in 1933. The 1937 figure for poetry and drama, however, is lower than the total for either 1933 or 1935; apparently versification has either not yet struck bottom or not begun to rise.

Titles in science and technology dropped in 1933 to 1,611,642, a decline of 11 per cent from 1931, and began climbing in 1935, when 1,937,084 copies were published, to reach a total of 2,380,351 in 1937 — an increase of 30 per cent over 1931.

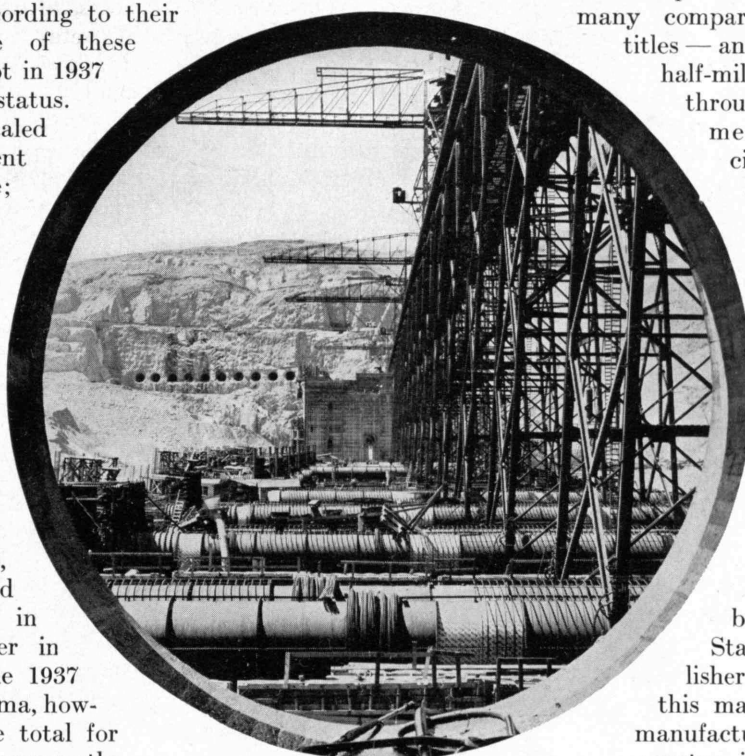
Pamphlets published in 1937 totaled 220,864,277, increasing 6 per cent over 1931 and 53 per cent over the low point of 1933. Almost four times as many text pamphlets were issued for school use in 1937 as in 1933, the totals being 57,004,998 and 14,995,206, respectively.

What the figures for 1939 will show is a hazardous guess. Yet combining these statistics for past years with a few recent publishing and merchandising announcements suggests that Ecclesiastes' words for it are still right. For example, slot-machine books are becoming an actuality through the appearance of Automatic Libraries vending the Little Blue Books of the Halde-man-Julius organization. A half-million copies, comprising eighteen titles, have been ordered for sale through coin vending machines after tests of the idea gave surprising results. One such coin machine in a

New York subway station in four days sold \$35 worth of the books; ordinarily, a vending machine which grosses a dollar a day is regarded as a good producer. Production of 100 machines a day is forecast to begin soon, with opportunities in sight for first-class location of 10,000 units. Nor is the prospect limited to paper-covered books; adaptation of the machines to vend hard-covered books of other sizes is regarded by slot-machine executives as entirely possible and as offering not only substantial profit but also an ideal way of supplying readers with good reading material.

One series of pocket-sized books — including many comparatively recent popular titles — announces the sale of a half-million copies since last June through bookstores, department stores, drugstores, cigar stores, and newsstands in large cities. Plans for distribution in smaller cities and towns have been completed. Over a score of titles are included in the firm's list, and over a hundred thousand copies of one of them have been sold. Nearly three hundred titles compose the list of an English series of similar publications, some ninety of which are being offered in the United States as a result of the publisher's recent decision to enter this market. Plans call for the manufacture of the books in this country if sufficient demand for them is disclosed by a trial year; the South American market, as yet untapped by this series, may ultimately be supplied with volumes

manufactured here. An idea of the extent of the series and its sales may be gathered from the estimate of 2,000 tons as the amount of paper used in the books last year.



U. S. Bureau of Reclamation

At Coulee Dam, from the mouth of a cable gallery 12 feet in diameter, this is the view toward the west nonoverflow abutment section.

Bottles Battle

HIGHLIGHTING the turbulent container industry where glass companies are buying can companies, and can companies are making paper containers, are two major struggles — between glass and tin cans for beer (about which enough has already been said), and between glass and paper for milk. Up to about half a century ago the problem of how to package milk was grandly ignored by having the milkman ladle the fluid into a pitcher or pail left nightly on the doorstep. Then as new ideas on sanitation were introduced, glass served effectively and without challenge until 1928 or 1929.

About that time, the first paper containers for milk were tried. In place of the familiar milk-bottle cycle, a roll of paraffin-coated paper was fed into one end of the

machine, and out of the other end rode a file of filled, sealed milk packages, almost ice cold. A quart in paper weighs perhaps two-thirds as much as a quart in glass, takes up half as much space, and requires no bottle-washing apparatus, no return of empties. But a glass milk bottle costs only about five cents (in 1933 about 288,000,000 of them were blown) and is good for twenty-five to thirty round trips to the store, while the single-service container costs about a cent. The battle, therefore, is on very even terms; in fact, it is generally agreed that up to the time the milk leaves the loading platform of the processing plant, glass has the advantage. Where deliveries are made in bulk, however, as to stores, schools, and institutions, the lower transportation charges on the paper containers and the elimination of the bottle deposit appear to give the cellulose product a slight edge — not that surveys by makers of glass containers agree! Nevertheless, although glass long ruled the family routes, no small per cent of the packaged milk moving into Greater New York is now wrapped — if that is the word — in paper, and stores such as those in the vast purlieus of the Bronx are the principal customers. Estimates of the exact proportion of paper-contained to glass-bottled milk vary with the identity of the estimating agency. Developments may be expected to produce more accurate figures, however.

A trial period for the use of two-quart paper containers for the home delivery of milk began recently in Brooklyn, for instance. The system is expected to be extended to the rest of New York in future. It demonstrates anew the familiar disparity between legal requirements established in terms of old techniques and the practices made possible by the introduction of new methods. New York's laws require that all milk containers shall be filled full to the bottom of the cap ring or stopper — a stipulation designed to prevent short measure. The new containers, however, which hold two quarts, are filled only to half an inch of the top; hence their use really involves violation of the law. This is to be waived during the trial period provided that the saving is passed on to the consumer. Announced prices for milk in the rectangular paraffin-lined vessel are a cent and a half less per quart than for milk delivered in glass. The milk companies stress the point that this reduction in price results from economies made possible by the new container and does not involve any reduction in the income of farmer or employee.

The introduction of the cellulose container has been marked by frequent court contests. Some of them have arisen from attempts to increase the price of the paper-covered milk in order to offset its selling advantage of requiring no deposit, others from fears that paper bottles are not sufficiently sterile. Inability to see the cream line clearly also creates legal difficulties in some areas. Because there is an imposing list of micro-organisms which can and do get into paper-mill systems, unrelenting care is required to produce material that is fit for packaging food products; and many items ranging from shellfish to ice cream are so wrapped. The manufacture of paper satisfactory for such use requires virgin pulp, special precautions with the water supply (even mountain water is chlorinated), low dirt and slime-spot counts, a minimum of human handling, and

careful protection of the finished paper while it remains in storage. Anyway, regardless of who wants to see that cherished family tradition, the daily quart, remain inviolate, at least one group will probably be found unanimously in favor of the paper bottle — the amalgamated umpires of America.

Knowing Eye

THE brainwork in a new method of photographic reproduction is the latest assignment of the photoelectric cell, child prodigy of the science of electronics, says *Compressed Air*. Thus photographs, drawings, or prints can be copied on linen, paper, metal, or nearly any other surface by means of an airbrush which is controlled by the electric eye. The reproduction can be made to scale or can be enlarged.

A beam of light which scans the original is reflected to the photoelectric cell, which translates variations in the light beam into an electric current varying in accordance with the high lights and shadows of the original. This current, after being amplified sufficiently, is used to operate the jet of a spray gun as it is played upon the reproducing surface. The photoelectric cell does its job by reading the original, line by line, and translating the brightness of the light it receives into pressure on the trigger of the spray gun.

Muck Sticks for Japan

JAPAN is acquainted with the spade, the scoop, the power shovel, but not, according to an article in the *Engineering and Mining Journal*, with the round-pointed, long-handled mine shovel more frequently referred to as a "muck stick." Until about a year and a half ago ore from Japanese metal mines was loaded as it had always been loaded: with *kassa* and *mi*. The *kassa*, a triangular-shaped hoe, was used to scrape the ore onto a wooden or steel pan called a *mi*; then the miner laid aside his *kassa*, picked up the *mi* by its two handles, and emptied it into the mine car or chute. Although the miners are inured to this process through long practice, it is enough to give a motion-study engineer the willies.

The American consulting engineer who set out to eliminate this anachronism found that he had first to import two sample mine shovels from Arizona. With copies turned out by a Japanese firm he started an outdoor school in which miners (with the full co-operation of the management of the mine where he was employed) were taught to handle the new tool properly. For distribution to other metal mines the Japanese government has made a film illustrating the superior efficiency of the shovel.

The survival of an unnecessarily slow and tiring operation amid what is in many other ways a highly industrialized society may be an example of a cultural lag, and may also be a Twentieth Century instance of a point made by Hogben, and by other commentators on the history of technology, that the existence of slave or cheap labor has never been propitious to the rapid development of scientific knowledge. Though the muck stick is hardly a laboratory instrument, the saving of labor is a function of science. (Continued on page 88)

The Haven on Pitcairn Island

Contrasts Are Great Between the Present and the Days of the Mutineers of the Bounty — Yet the Machine World Appears Admirable

BY DAVID A. YOUNG

FEW stories of mutiny on the high seas have been so carefully or so vividly told as that of the mutineers of *H.M.S. Bounty*, who, seizing the vessel and setting their commander, Lieutenant Bligh, adrift, sailed out of the known world of 1790 under the leadership of the master's mate, Fletcher Christian, to begin a different life upon a remote island in the South Seas. In the years since, the little settlement on Pitcairn has become well known to American readers through the dramatic retelling of its story by two writers, Charles Nordhoff and James Norman Hall, who at the end of the World War in no small measure emulated Fletcher Christian by stepping out of the then ordinary world to take up residence in Tahiti. The civilization which they thus left — that of technology, industrial and commercial expansion, the machine, swift communication and transport, generously available artificial light, vast advance in medical service — had really been just kicking off its swaddling clothes when Christian and the mutineers brought their stolen vessel into Bounty Bay. The most widely heralded historians of the Pitcairn settlement took up their version of a new life after a near-catastrophe of that civilization. Resurgence of catastrophe now gives special point to the following simple account of life on Pitcairn by a fifth-generation descendant of the mutineers. Mr. Young's recital is presented practically as he wrote it, with only very slight editorial change.

THIS job is rather difficult for one who has never undertaken work of the sort before. To give a real outline or narrative of the island and myself will be hard to do absolutely correct; however, I will do my best. You no doubt are familiar with the account of the mutiny of the *H.M.S. Bounty*; therefore I will not enlarge on it at all. There are about 216 inhabitants on Pitcairn at the present time. Quite a number are in New Zealand; most of these, however, expect to return soon.

Only three of the original names of the mutineers remain. Almost everyone on the island has the name of Christian or Young since there is only one McCoy



Bounty Bay

left. Three other names have been introduced. Three American men came here and married native women: giving the names Warren, Clark, and Coffin to us. Personally I am one of the fifth generation. My father was the great grandson of Midshipman Young, and my mother the great granddaughter of William McCoy. Through intermarriage I am descended from Adams, Quintal, Young, McCoy, and Christian.

Our manner of living today is far different from that of our forefathers. Our cultivation is easier and our privileges more: but along with these there is a detriment to our well-being. Whereas our forefathers were happy and contented, also sociable among themselves, today the island is full of selfishness and greed and unrest. This should not be, because everyone here owns his own home, farm, and fruit trees, and has a chance to earn

a little cash. But our contacts with the outside world have increased; more ships call; and discontent is the result.

In the olden days pigs ran all over the place, but because of our religion* these are useless to us; so there are none now. There used to be a lot of cattle and sheep here also, but on account of the lack of water we had to let these go too. The same with turkeys. The goat is the only animal used for eating now. These are scarcer by 60 per cent than before. We eat chickens, fish, goat meat, and the cold storage meat which we can buy from the ships that call.

Fishing is a sport as well as a food supply. There are many and varicolored types of fish. Their sizes vary also, from five inches up to three and four feet in length. Almost all fish caught are edible. Many families spend the days when the surf is good, fishing from the rocks on all sides of the island. Men from different groups on the island go out in the canoes and fish in from five to two-hundred fathoms of water. Crabs and squid (commonly called cuttlefish) are used for bait.

*Seventh-Day Adventism.



David A. Young with his grandchildren and his blond stepson

The fishing canoes are made by the natives, of tree trunks hollowed out and put together. Two trunks are used for one canoe. These are large enough for hoisting sails. After coming ashore the fishermen take the fish to their respective groups and the fish are divided. A group consists of several families and regardless of which one uses the canoe for fishing, when he returns the fish is taken to a common meeting place and divided among the families in his group. In this way everyone, whether a fisherman or not, gets his portion of fish.

There are no horses nor tractors here; therefore all the farm work has to be done by hand power. All house building is also done by hand. The trees are chopped, and sawn by hand with great pit saws, run by three men on a large stage built for the purpose. About fifteen or more men will work turn about until enough wood is sawn. It is then let stand to season and when they are ready to build or repair a house, there are always enough men to do the work. In olden days the houses were roofed with thatch; today they all have corrugated iron in order to catch the rain for the cisterns. Every home has glass windows as well.

The soil is so rich that very little if any cultivation is necessary. All sorts of tropical vegetables and fruits are raised. The chief vegetables grown are peas, beans, cabbage, lettuce, carrots, corn, sweet potatoes, and yams. The chief fruits are bananas, oranges, paw paws, alligator pears, mangoes, passion fruit, barbarbadines, rose apples, mountain apples, and pineapples. Much of the fruit rots on the trees and ground or is eaten by rats because there is so little access to the markets. However, during the orange season we are privileged to send a few cases of citrus fruits to Wellington and Auckland, New Zealand. We receive our pay in either cash or trade — whichever we desire. Otherwise the sale of handmade curios and fruit to passengers and crew alike on the passing ships is the only chance we have of earning cash. For all staple foods such as flour, rice, macaroni, sugar, salt, we either trade on the passing ships or send to the merchants in London or New Zealand.

The natives do all sorts of hand work. The men do woodcarving: making such things as canes, collar boxes, puzzle boxes, vases, trays, model ships (the H.M.S. *Bounty* taking the lead in these). The women weave the pandanus palm leaf into many beautiful things. First

they have to gather it, strip the hard sharp thorns off the edges of it, boil it and bleach it in the sun, soften it so it will be pliable enough to weave it, then dye it, soften it again. They weave such articles as fans, napkin rings, wall pockets for letters, work baskets, jewelry baskets, and shopping baskets of all sizes.

There are no snakes nor poisonous insects nor any dangerous animals on the island at all. However, we are overrun with roaches, ants, and rats. Not one song bird inhabits the island, and compared with America there are *very* few wild flowers.

The school is a fair sized one for such a small place. It is taught by a man from Australia. He is here for a three year period and will be replaced by someone else when he leaves. Formerly the school was taught by native teachers: but because there was no opportunity for higher training, especially in normal work, the British government introduced this new system and it seems to be working quite well.

The island is owned and governed by Great Britain, through the High Commissioner of the Western Pacific and our own immediate government. Our own government consists of a set of laws made by the people here and enforced by our magistrate and his assessors, who attend to all petty and internal affairs that must be attended to on the island.

The contrast is so great between the people of today and those of yesteryear on Pitcairn Island that one would not recognize it as the same place. Yet if contrasted with the outside world it is a little haven. While not enjoying modern civilization and many of its blessings such as electric lights, radio, refrigeration, we have the quiet and satisfaction enjoyed nowhere else in the world.

The machine world I think is wonderful and the thrill that I had from my trip to London* two years and a half ago is more than words can express. There are so many things in London that we on Pitcairn are not used to see. To me it was not so strange as I have seen much of it before, for I have been to New Zealand and Tahiti. Of course here a man has to do all his work by hand, with the sweat of his face, and sometimes it is a heavy job, but being used to it, we do not find it so hard, and there is a pretty good pride in it.

*To represent Pitcairn Island at the coronation of King George and Queen Elizabeth.



Islanders coming off to a ship, using a whaleboat constructed entirely by themselves

How Do Insulators Insulate?

New Insight into the Relation Between Conductivity and the Electrical Structure of Matter

BY ARTHUR R. VON HIPPEL

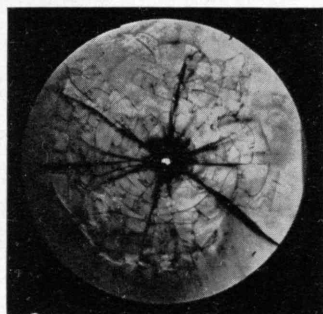


Fig. 1. Breakdown of a glass plate by high voltage

professional ability to transport charges differed widely, and closer analysis of this conductivity gave clear insight into their defective character. The insulators, however, were of much less transparent personality. They were found to be able, in some mysterious way, to block more or less effectively the electrostatic forces between electric charges. This power — termed polarization by its discoverer, Faraday — is represented by the dielectric constant, a measure of the decrease in force between two charges as a result of their being immersed in the insulating medium. Discovery of the polarization effect gave the first indication of the electrical structure of matter; it started insulation research. The dielectric constant became the first of the identifying marks characterizing insulating materials.

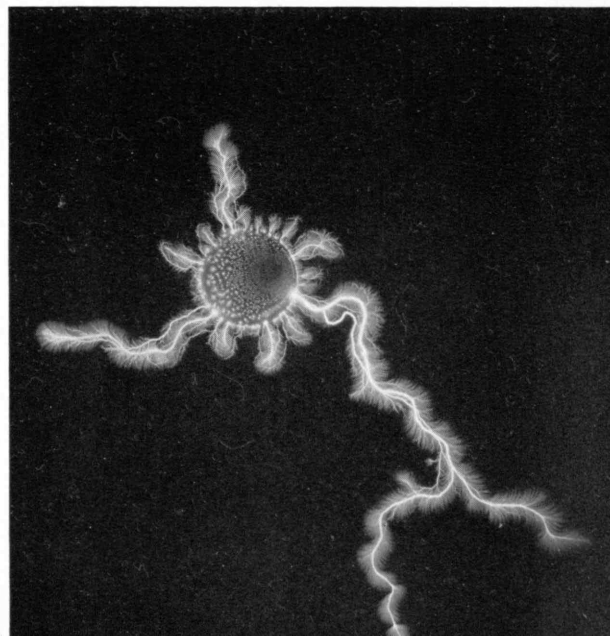
Experiments with alternating electric fields made it evident that polarization often requires time in which to develop and to disappear. Delay in time between the exterior electric field and the effect causes a transfer of energy from the generator into the insulator. This energy registers itself as heat, and so the dielectric loss — the heat generated per second in a substance on account of this transfer — is recognized as a second characteristic of insulating materials. Excessive losses may destroy an insulator by heat; excessive electric stresses may rupture its structure, piercing it as with bullet holes (Fig.1). Hence the maximum field strength which an insulator can stand, its breakdown strength, is its third important characteristic. Every insulating material might be expected to be identified by these three earmarks: dielectric constant, dielectric loss, and breakdown strength. But just as we hope to gain a clear idea of the personality "insulator," it vanishes like the Cheshire cat in *Alice in Wonderland*.

Its disappearance — result of more delicate measuring of a large variety of substances — demonstrates that the electrostatic classification of matter cannot be vindicated any more, that there is no wide gulf separat-

ing conductors and insulators. In every insulator, charges can be transported; every insulator, therefore, is in some measure a conductor. Its conductivity may be produced by electrons — the negative units of electricity — or by positive or negative ions, that is, by particles of matter acting as charge carriers. The degree of conduction depends not only upon the material but also upon the treatment it is given, its temperature, the strength and duration of the field to which it is subjected, its previous history, and even the metal electrode in contact with it. Breakdown strength and dielectric loss are similarly involved quantities. The situation hence turns out to be one of biological complexity, reflected in rules and regulations for standardizing the product so intricate that they might fill any lawyer with envy. The word "insulator" instead of being a fence becomes a chameleon.

The urgent demand for insulators which was imposed by the phenomenally swift development of the use of electricity during the past half century led to a technical boom in which our knowledge of the fundamental facts was quickly outrun. In the meantime, however, basic research into atomphysics — the study of the structure of atoms and molecules — was laying new groundwork to which the insulating art should be able to return when need developed. Electrical engineering thus repeats a cycle which is fairly well known in other arts. This cyclic pattern begins with practical results that have been attained with comparatively little attention to ideal effectiveness and are found to work well enough for some time. But as applications and requirements in the field served by the art become more complex and delicate, the brute-force methods which originally served are seen to be inadequate: "tailor-made" products are found necessary in order

Fig. 2. Spinal column of a ghost cat. The Lichtenberg figure produced by a negative discharge directly onto the surface of a photographic plate at high pressure. Note how the smooth negative sparks are chased by the positive sparks in the fashion explained on page 86.



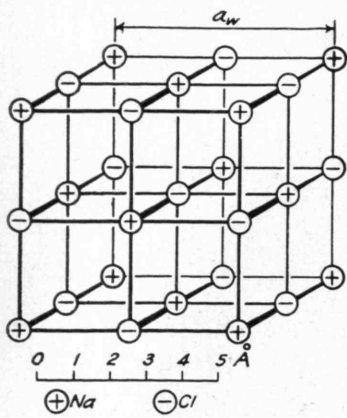


Fig. 3. Sodium and chlorine ions forming the lattice structure of a rock-salt crystal. The scale gives distances in hundred-millionths of a centimeter.

With insulators, this parallel appears clearly true; the factors hitherto measured are evidently complex quantities depending upon elementary variables which themselves are not yet sufficiently known. Consequently, a new type of insulation research has developed, concerned not with complicated materials of immediate practical value but with insulators of the simplest structure. The criterion of simplicity is given by atomphysics: A clear geometrical arrangement of atoms or molecules bound together by well-known forces is a test case to start with. A single crystal of rock salt, for instance, characterized by the periodic sequence of positively charged sodium and negatively charged chlorine atoms diagrammatically presented in Fig. 3, or a single crystal of sulphur built of neutral particles may thus become the oracle of the insulation engineer. Measurements on such materials under accurately controlled conditions will establish the theoretical knowledge necessary to meet a given practical situation.

Recognizing the situation and the promising start that had been made, the Institute some time ago inaugurated a laboratory for insulation research in the Department of Electrical Engineering. In development since November, 1937, this laboratory bridges between physics and electrical engineering by attacking the problems of insulation from the atomphysical standpoint. An outline of the progress made in its several related branches during these two beginning years follows.

Breakdown and losses, conductivity and dielectric constant, naturally, are the macroscopic phenomena with which the laboratory is concerned. How they are created by atomistic effects, how they may be influenced by the right intervention, how they may be described quantitatively by the structure theory—that is the problem. Study of the effects of voltage and current in gases, liquids, and solids is being done at the same time to detect experimental links among the different states

to meet economic competition and to permit still further general refinement; and thus recourse to further fundamental study is made desirable. Engineering may hence be likened to the legendary giant Antaeus, with whom Hercules struggled and who regained strength each time that he touched the earth. The vitalizing soil to which the engineering Antaeus must periodically return is that of elemental investigation. Otherwise he will be strangled in mid-air by the forces of nature.

of aggregation of matter. The gradual transitions from the insulating state with few mobile charge carriers to the metals with their inexhaustible supply of conducting electrons are under investigation.

Electrical measurements alone give insufficient information in this type of research, as they do not settle uniquely the arrangement of the circuit elements contained in a filter box; the cover of the box must be removed. Consequently, the laboratory has been developing optical methods to make clear the visible changes in materials under electric stress. Further evidence has been secured by analysis of the electric noise accompanying current flow and by study of the reaction of the insulators to light: the absorption of light of different wavelengths, and its effect on the conductivity of the material, its "photoelectric response."

This photoelectric aspect of the work has gained additional interest because of the Institute's program of research into solar energy under the Cabot Fund. The photoelectric conversion of solar energy into electric power would be ideal if a yield of about 5 per cent could be achieved at reasonable cost. Today, only about a tenth of this amount can be realized, but some hope exists. By the photoelectric effect in the interior of dielectric materials, every light quantum which is absorbed can be converted into an electron free to migrate and thus to constitute part of an electric current. If these electrons could, by the light-conversion process, be driven fast enough to build

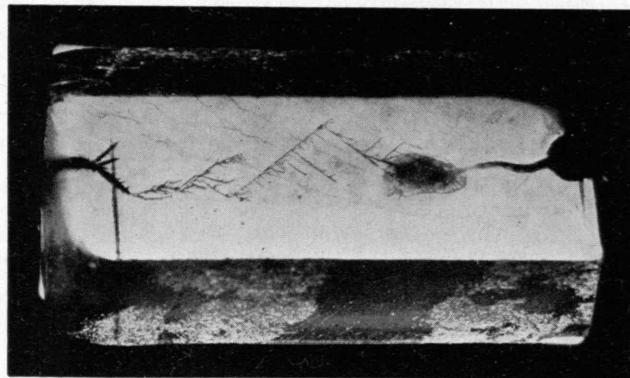
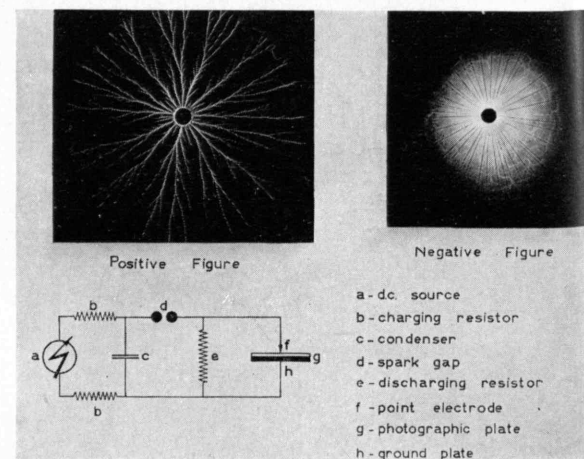


Fig. 4. Destruction of a sodium chloride crystal by electrons. Instead of taking the shortest path, the electrons are compelled to migrate in 45-degree directions.

up an effective potential difference, the problem of conversion of solar energy into power would be solved. As a matter of fact, this kind of conversion is performed on a modest scale by blocking-layer photocells, a special arrangement of a selenium or cuprous oxide layer between metal electrodes. Empirically developed, these cells are a fair illustration of the cycle by which technical development outruns fundamental knowledge, for their action is not yet fully understood. Their future possibilities cannot, therefore, at present be foreseen. The insulation laboratory hopes to secure the necessary knowledge through the construction of such a photocell from materials whose entire behavior has been studied beforehand.

Fig. 5. Electric circuit for shooting Lichtenberg figures, and the principal types of discharges recorded with positive or negative voltage at the point electrode



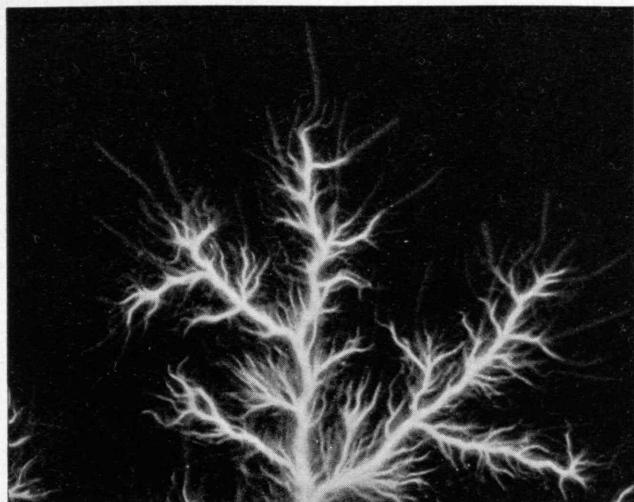


Fig. 6. The development of a spark — the bright structure — out of the primary discharge — the faint structure — which is first created around the electrode

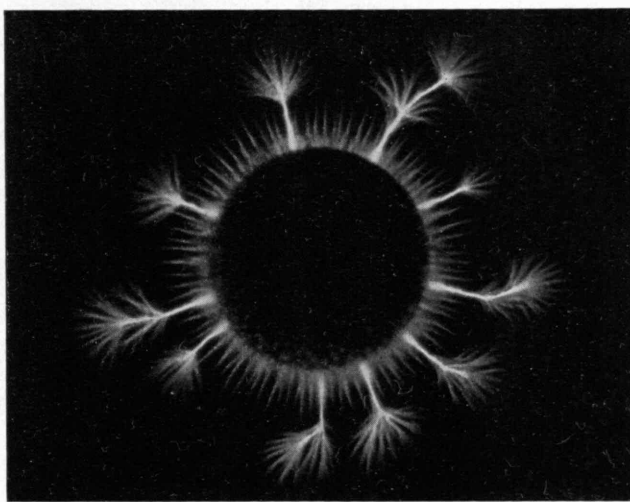


Fig. 7. Positive discharge in Freon (CCl_2F_2). The fine structure of the positive trees (see Fig. 6) has disappeared, because the gas molecules capture the slow electrons

Another contact with problems of immediate practical importance has quite recently been made in the laboratory's work. Thanks to the production of new types of generators, radio waves of the centimeter range possessing substantial strength have become accessible. The possibility of guiding these waves and of bundling them in sharp beams by simple devices like the electromagnetic horn developed at the Institute opens a new field of applications which is being studied by the communications division of the Department. Very little is known about the interaction of these ultrashort waves with dielectric materials, but in this frequency range, where optical means of focusing and reflecting can be used, insulators can easily be shown to have special applications as wave filters and wave guides, as modulators and receivers, if the necessary dielectric properties can be obtained. Search for means of obtaining them may also, it is hoped, disclose more knowledge about the sources of dielectric losses.

Results already attained in the program above range from comprehension of how electrons become trapped inside a crystal to the devising of means for photographing the heat patterns caused by an electrical discharge in a gaseous medium, and of apparatus for greatly extending the range of pressure at which such photographs may be taken.

To begin with, research into the breakdown of solid insulators has resulted in understanding of the mechanism in materials like rock salt (Fig. 3), built from charged particles. The early stages of this study were recounted in The Review in February, 1937. Electrons pulled out of the cathode by the high voltage travel through the rock salt; because of their interaction with the ions of the crystal-lattice, the crystal begins to vibrate. The electrons have to pay for the disturbance which they have created, that is, for the longitudinal acoustic waves generated by their migration; they pay by losing kinetic energy and slowing down. Their fate depends on the voltage applied across the crystal insulator. If the accelerating effect of this voltage cannot overcome the friction generated by the vibrations of the lattice, the electrons continue to slow down until they

become trapped. When thus trapped, an electron may become an explosive by enlarging the size of the trapping particle more than space permits. Glass, in this way, may shatter. When the accelerating effect of the voltage is greater, however, the electrons are speeded up until they ionize and destroy the insulating material.

These observations connect the breakdown strength of a material with its structure, and suggest furthermore that the breakdown strength measuring a special state of electronic conduction in the insulators might be influenced by questions of temperature and purity. An increase in the temperature of the insulator can increase the friction which the electrons encounter; foreign materials in the insulator can stop them in their journeys. The situation is similar to that existing in metals, where increases of temperature or admixture of alloys will increase electrical resistance. The relationship between breakdown strength and composition in mixed crystals was measured some time ago. Recently the insulation laboratory has found the expected gain in breakdown strength with temperature in single crystals if the temperature is increased from that of liquid air (-180 degrees centigrade) to about 50 degrees centigrade. In amorphous materials, like glass, where no periodic order exists, an opposite effect appears, (Continued on page 85)

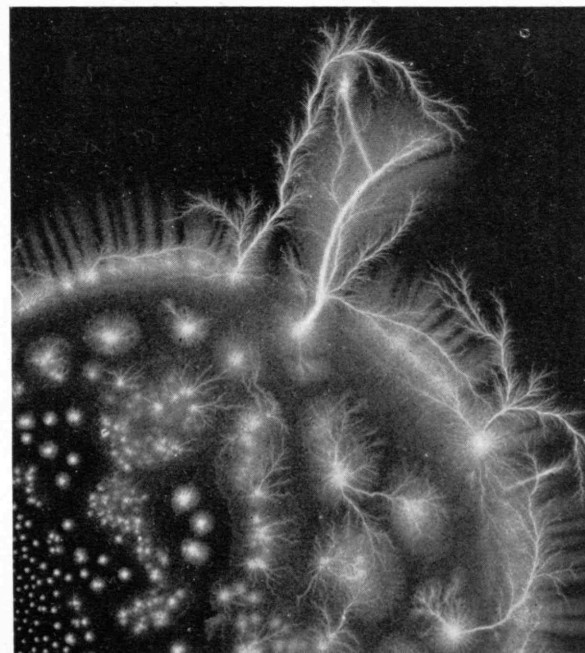


Fig. 8. High-voltage landscape. The sectors are patterns of electron avalanches. The smooth stem is a negative spark. The trees with their fine structure are positive sparks.

Mopping Up the Thoroughfares

Along the Coast of Maine the Lighthouse Tender and Her Crew Have a Busy Life, Which January Storms Make Busier

BY RICHARD HALLET

THE lighthouse tender *Ilex* left Portland Harbor at noon of a January day for a business trip along the Maine Coast. She stopped to fill a gas buoy and reached Portland Lightship at 1:00 p.m. There had been a savage northeaster, and the captain of the lightship reported "a bad washing." The lightship had been right in the trough, jerking and tugging at her 6,000-pound mushroom anchor. She had rolled enough, the captain said, to tire out a man with a rubber gut and a buckskin belly.

"She'll scare you to death before she drowns you," one of the lightship's men said; but we got the impression that going to sea in the same place had its disadvantages. At times green water had washed right down into the fo'c'stle; the crew were kept busy sledging open the freeing ports in the waist and knocking ice off the man-tall letters PORTLAND on her red sides. The wind was WNW now, and dying out. The day before, a 70-mile gale had stood the crew on their noses and all but rolled the bones out through their skins.

The *Ilex* moved away for the island of Seguin off the mouth of the Kennebec River. Seguin's west face was frosted with spray clear to the light, but seas had licked black all the low-lying rocks on the landward side. The *Ilex* whistled for the island to send out a boat. The island didn't hear, and the *Ilex* dropped her own work boat into the water. With three men at the oars and the lad in the stern pushing against the butts of the aftmost pair, she struggled hard and succeeded in putting a small package on shore.

That night, the *Ilex* dropped anchor in Boothbay Harbor. The next day was clear and frosty. Stopping only to set up a tripod that the storm had knocked down, she went straight for Bantam whistler. The Bantam looked frosty in the lugs and bellowed out loud when the *Ilex* got her hooks into him. Lifted clear of the seas, he rolled helpless against the ship's buoy pad. The crew malleted off brine ice and hauled out of the whistler's

inwards an expended cartridge. These cartridges contain acetylene gas under pressure of from 10 to 13 atmospheres. While the old cartridges were being hoisted out and new ones rammed home, the groaning old ball-and-chain brother hung against the ship's side in the grip of a four-inch sling. This whistler weighed 11 tons and was not an easy creature to groom in a hurry. But we were in a hurry. On the water were grease spots that might be forerunners of a freshening wind. If the sea got up a little more, it might crack the whistler against the ship's side like an egg.

The *Ilex* dropped him back safely, recharged. Later in the morning, off Whitehead, she dropped into place a new red bell buoy, a pretty trinket with 46 fathoms of chain and four hammers. The old bell had winterkilled with ice, and all the hammers but one were broken off. First the *Ilex* dropped the buoy, then the chain, last of all the mooring rock, a three-ton block of granite smeared with vermilion paint where the buoy painter had wiped his brushes.

After setting the buoy, our captain prowled all round it, going ahead and back on his engines and checking up on the ranges with a sextant in each hand. Sometimes an old sea might run deep enough here so that the shoal itself would break, and then he could set his buoy without taking either bearings or soundings; such was not his luck today. He got a notch in a hill in line with the right tangent of the L of a white house that had begun to bother him lately because it needed fresh paint to bring it out. "Bearings will fool you," he said to me. "What looks like a good mark in summer against green is lost against winter snow."

In some places he had piled up cairns of stones ashore to help him, but even these might be veiled away by vapor, fog, or haze. And there is a certain buoy for locating which he must have Mark Island Light just shut in by a wooded point. It would be better, of course, if he could have a direct bearing on the light itself for

From the S.S. Europa, eastbound in February, 1935, with the wind blowing over 75 miles an hour, the Atlantic looked like this.

Cwojdzinski, North German Lloyd



this buoy, and he had tried to get the man who owned that patch of woods to cut a few cords just there; so far, however, the man had kept himself warm by cutting wood nearer home.

The new bell off Whitehead was quick and limber, and kept in voice with very little action of the sea. It gave us a tongue-lashing as we went on for the island of Metinic. Sitting on the high bench behind our ship's wheel, I asked the captain whether any pinnacle rocks had been reported hereabouts — those submarine church-steeple affairs that will sometimes elude the vigilance of even three centuries of charting. A pinnacle rock, he said, had been reported only the year before. A fisherman had declared that he had stood on it at low tide in his rubber boots. But it had turned out to be a can buoy which salt ice had uprooted and dragged into deep water where its chain held it submerged.

Metinic is very flat. The *Ilex* ran her work boat in on the slips which take the place of wharves on these outlying islands. The slips, of which there are three, are slanting barks of timber dogged to the ledges with iron dogs, and the trick is to get the boat's keel between either two and run up on her bilges. "You wait a few seas," the second mate said, "and then you run in, and either you put her keel between the slips or you miss the slips and hit the rocks."

He hit the slips this time. We came down with a crash and a bound on reinforced bilges, and Frank Hilt of Metinic was waiting, in hip boots, to slam his hook into the boat's eyebolt forward and winch her up before the next sea could drag her back. It was like gaffing a big fish. Frank Hilt said the island hadn't got a very bad washing. He spoke with pride of her seaworthiness and obviously didn't mean to give her a reputation for shipping seas too easily. Nevertheless, solid water will sometimes roll clean over Metinic. On the backside there's a slope which makes a nice jumping board for green seas. Frank Hilt had lines rigged to keep sea birds from flying into the light.



The bell tower on Avery Rock in Machias Bay, Maine, after it took a beating in January, 1926

The *Ilex* landed coal and then steamed away for Seal Harbor. Just after dark she put her searchlight on a small gas buoy. "Pilot smutted," our captain said. Out of a blue-black sea the buoy sprang up, brilliant red with frosted legs, and then vanished, as the searchlight roved and fixed on a grim ledge a hundred yards away, as if holding it at arm's length. The *Ilex* cleaned out the pilot light and felt her way into Northeast Harbor.

In the morning we steamed for Tibbetts Rock. A nun buoy marks the rock, but for a moment it looked as if the nun had taken French leave. She was nowhere in sight. "Must be the gosh-darned old lady has waltzed away again," the second mate muttered.

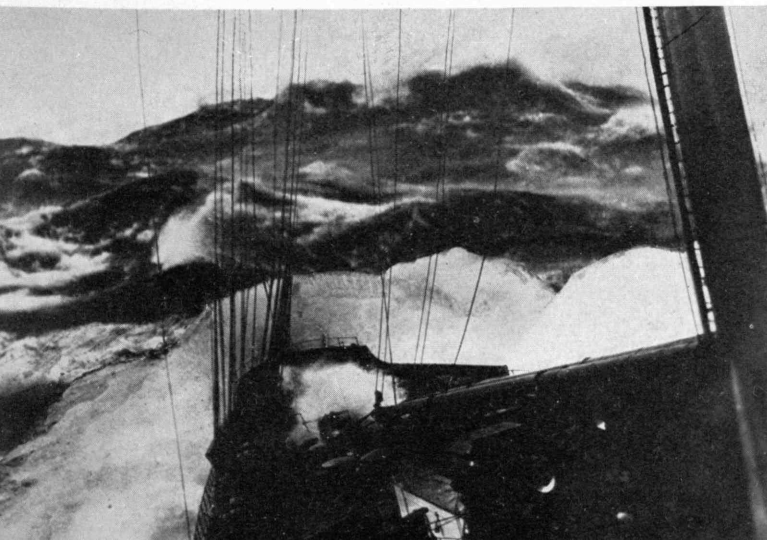
Buoys have been known to go on frolics of their own. Lately the freighter *St. Patrick*, coming from Yokohama, had reported a vaga-

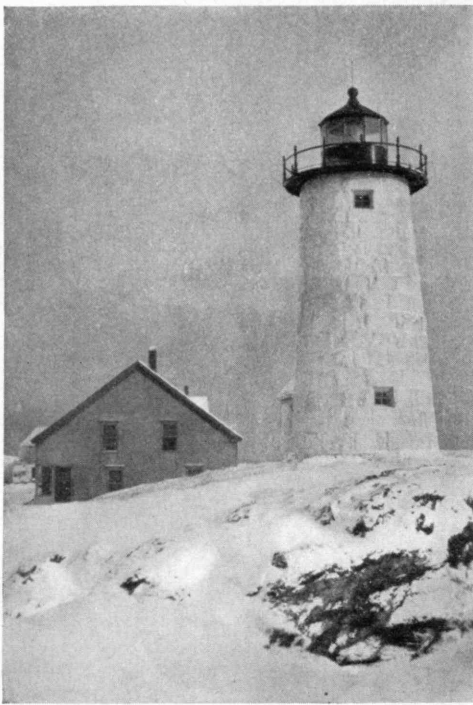
bond whistling gas buoy 170 miles east of Boston Light. The shoal warning of that rogue buoy, lowing like a sick calf and burning bright, had given the watch officers of the *St. Patrick* a fearful start. American buoys have been known to fetch up on the west coast of Ireland.

But the Tibbetts Rock nun was not so far away. Almost at once she jumped into sight. She had merely been playing hide-and-seek. Her chain had got doubled round a rock and dragged her under as the tide rose. Now she had shaken her chain free again. "That's good," our captain said, holding his head down against the icy wind. "Might have had to chase it a long way. It's a twenty-thousand-dollar property, and if it breaks loose, we have to go on until we find it. Chased one once for nine days."

He headed the *Ilex* for Petit Manan to unload lumber. Here our work boat's engine sounded skippy, but she jumped up the skids like a squirrel going up a greased stump. The Frenchman there who had studied for the priesthood got a hook into her. His hat and whiskers were well iced. While helping us unload, he complained that he had lost a crowbar; but he thought the sea would roll it up again. If he wanted anything that was lost, up

. . . The vessel sheered around broadside on the first wave, but was finally headed into the storm for six hours before proceeding.





*Libby Island's lighthouse tower
once winter has set in*

to and including a mushroom anchor or a steam boiler, the sea would roll it up eventually.

We were off again. "This blamed little engine doesn't fire any too good. Must be grease on the contact points," the second mate grumbled. He got a feeble little kick and yelled hopefully, "Shove her off," whereupon the Frenchman took the hook out of her. We slipped back fast on greasy slips, to plunge, wrong end to, slap-bang into a mountain of an on-

coming sea that boosted us right up into the sky.

"Now if this dratted engine won't work in reverse, look out for trouble," muttered the second mate. He had the ignition on, and he reckoned on the propeller's hitting the water to crank the engine in reverse and snatch the boat away from that rocky shore. He was lucky once more; we managed to claw off.

The *Ilex* continued on her appointed rounds. The morning was sparkling; the shore, black and white; seas, blue; hills, sugar dusted with snow. Moose Peak had a slanting wooden skirt, or windshield, from house to light to save the keepers from being blown off the rock. "It's the roll that washes away the buildings on these islands," the captain told me. "Sea gets a run for it and goes up just as pretty as an iron roller."

Libby Island showed the mark of the storm. The wooden breakwater was stove in. The boathouse, high up on this high-shouldered island, was half a ruin. For props the keepers had put two heavy beams against the boathouse door on the inside, but green water had mounded up in the gully there and smote the door from the outside, forcing the butts of those props through. Even now seas dropped aboard the west end of the island with a noise like a cartload of lumber being upset; and when we neared the slips, we saw that one of them, dogged though it was to the ledge with melted brimstone poured in round the dogs and a clincher ring on the top-side, had been booted clean away.

"They put slips in the worst places, just to make it interesting," the second mate said. The slips here were fixed in a cruel-looking black gully—the beach, he called it. It looked more like a maw. He dropped out a small anchor with a long fluke, held the stern by that, and eased in. He recalled with a laugh that last year the captain, bringing coal to the island in 80-pound sacks, had hit the outside stringer with his boat's keel, so that she slid up, toppled, and then shook off the wrong way. All those sacks of coal were dumped, and a hole was punched in the boat. The men had nailed canvas and laths over the hole, fished out those coal sacks while

standing up to their necks in water cold enough to stop the heart, and then gone back to the tender after more coal. A fine end to a hard Saturday.

This time he calculated the slips better and sat on safely. The keepers hooked us up. Their own island was all right and had behaved handsomely, they said; but Avery Rock, farther up the bay, had taken a shellacking. At the height of the storm they had seen that rock, with the seas, breaking at half tide, pluming up and hiding the lighthouse altogether.

Libby Island commiserated her lower-lying neighbor, but her own high crags were hung with massive icicles, and the wagon tracks leading to the light were lumpy with brine ice. Even the trees were sheathed in ice to the last twig and looked half winterkilled. Lobster traps were blown all over the place. "The sea certainly puts levers up against this place," the second said.

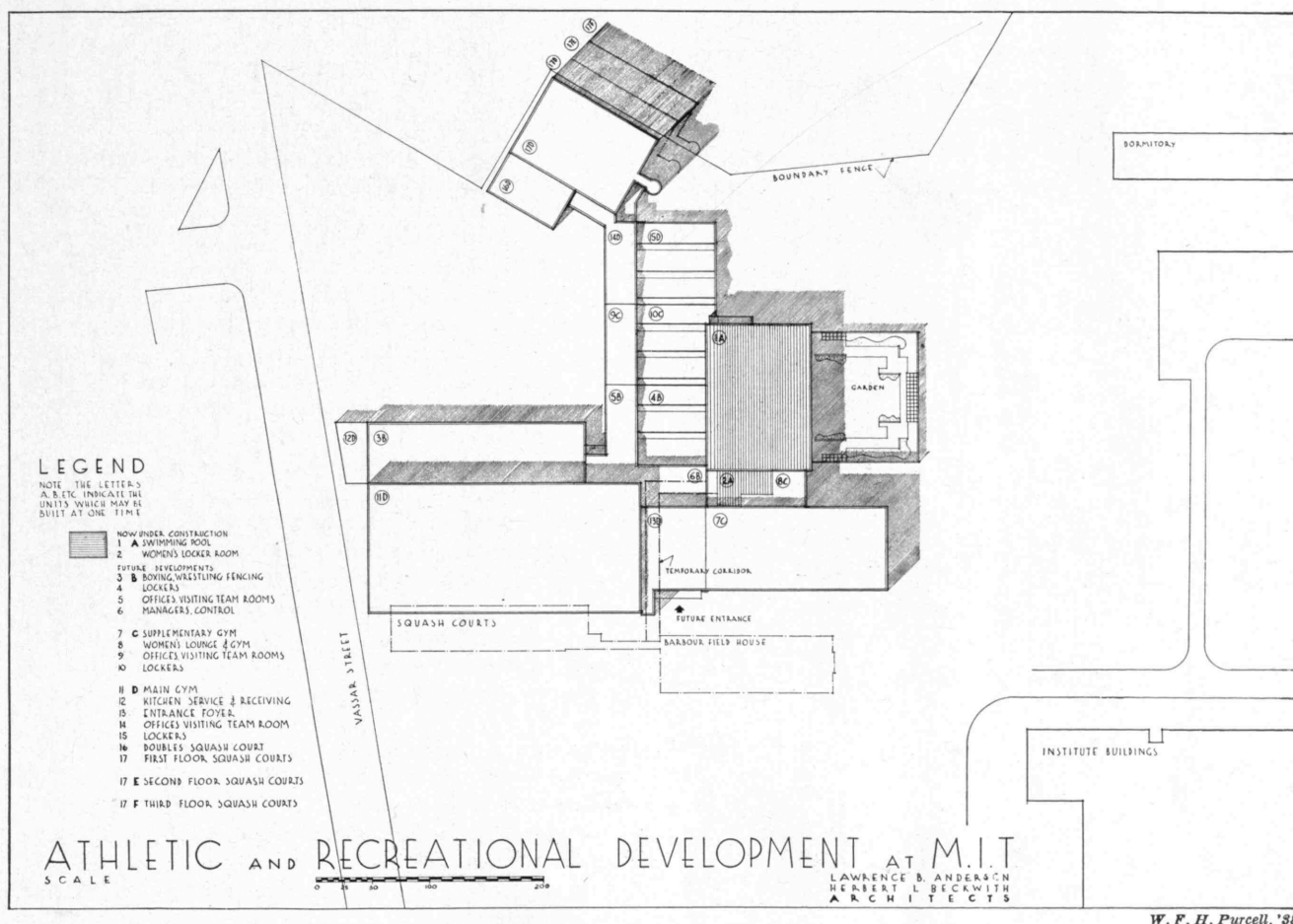
The damage the sea wreaks is in proportion to the resistance offered: little or no damage to a plank, more to a boat, still more to a ship, most of all to an island, for here the irresistible force meets the immovable body. The sea roars in stone faults, pries for holds, and then, getting a lift from the wind, towers and falls with force enough to split out granite blocks. The trees freeze to their heart rings, wind robs them of branches, the very trunks get cracked off and thrown down. The island grows bald-headed, changes its shape in century-slow touches. But the light winks on.

At Dohet's Island in the St. Croix River, the *Ilex* landed a bell beam. "Loose the whip. . . . Lower your main. . . . Ease the whip. . . . Shoot the timber and save this west tide," the second mate yelled. We saved it and, dropping down to West Quoddy Head, took a bell machine out of the caisson lighthouse in the river and went on to deliver it to the sorely smitten Avery Rock in Machias Bay.

The lighthouse there was built around the column of the light itself. The breakwaters were built like rams to split the waves in two; but this time the waves had circumvented the rams, had first reared up and smashed the bell tower and then silenced the bell. "Worst washing she ever took," the keeper, Pettigrew, informed us.

Once before, wind had blown the boathouse off the rock; but this time the sea had really been on the loose. It hadn't had, in Mark Tapley's celebrated phrase, any employment for its mind. It had smashed in the front of the house, where the windows were protected by solid two-inch plank shutters, and then had filled the house itself drowningful of water. "Tide was coming against the wind," Pettigrew said. "I said to myself: 'If the wind cants to the southwest, it's all over with us.' The lower the tide dropped, the farther it had to jump back, it seemed like. It got more of a run for it."

At the height of everything, with the air itself half water, the bell hammer had stuck. Even Thor's hammer would have got hung up in the midst of such ructions. Pettigrew had had to stand back of the bell hammer all night, and nudge it to induce it to strike. Meanwhile the iron bedsteads in the west bedrooms were getting twisted into true-lover's knots by the force of the water coming into the house through broken windows; plaster was falling from walls and ceilings; and Pettigrew, between spells of nudging the bell (*Continued on page 89*)



“... The Water's Fine”

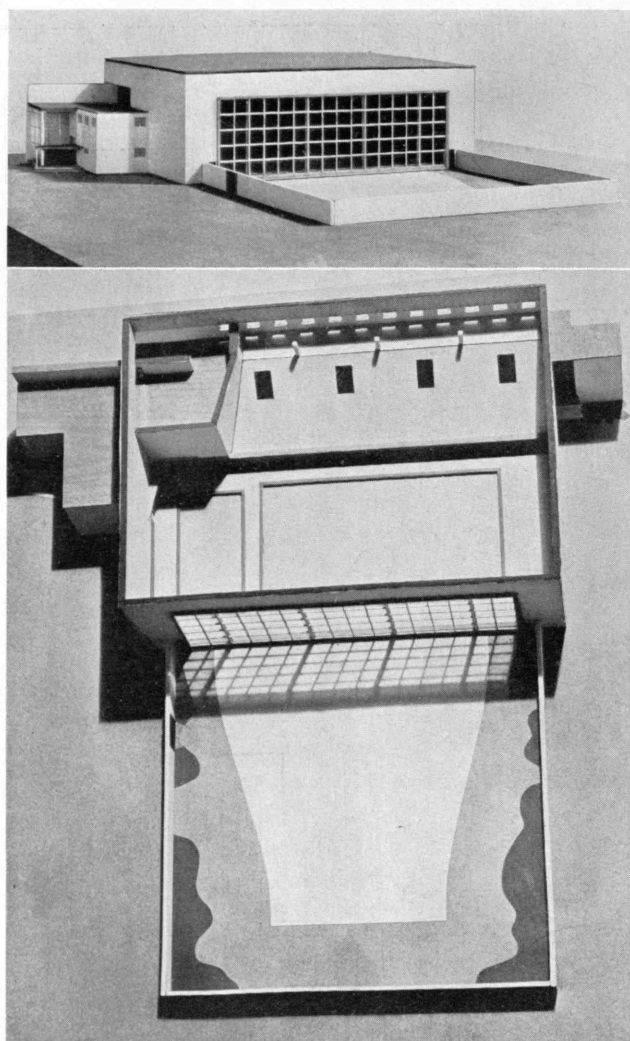
Construction of Swimming-Pool Unit of Alumni Athletic Center Highlights Fall Building Activities

PUTTING the sun himself to work and employing many of the skills and techniques of Technology's engineers, the new swimming-pool building, second unit in the program of recreational expansion made possible by alumni generosity, is fast taking shape in the northeast portion of the Institute's property near Vassar Street. It occupies the site of the former outdoor track and playing field and is so situated that it may be the nucleus of an extensive larger building which will eventually house all of the many indoor sports included in the Institute's athletic calendar. Construction began during the summer with the excavation necessary to accommodate the pool itself; erection of the steel frame of the covering building is at present nearing completion.

Like the Briggs Field House — alumni gift dedicated in June of this year — the athletic center, of which the pool building is the first portion to be built, has been designed by Lawrence B. Anderson, '30, and Herbert L. Beckwith, '26, both members of the Faculty of Technology's School of Architecture. The Aberthaw Com-

pany is the general contractor for the pool unit. The Briggs Field House is an example of honest functionalism; the new athletic center bids fair to possess the same quality, with the added virtue of being large enough to permit exploitation of monumental possibilities in its design.

The pool unit is to contain a standard intercollegiate swimming pool, 42 feet by 75 feet, and a shallow practice pool, 20 feet by 40 feet. The high-diving platform which is an adjunct of the main pool will consist of a reinforced platform cantilevered on a column. Springboards of the usual movable-fulcrum type will be used. The room containing the pools will have an over-all length of 125 feet, will be lighted from the south, and will have seats for 340 spectators along the north side. Included on the first floor are showers and locker rooms for students and offices for the coaching staff. On the second floor will be a dressing room and showers for the use of women. A temporary corridor will connect the pool building with the present Barbour Field House.



M.I.T. Photos

Exterior and interior of the pool building, first unit of the athletic center

The photographs on this page are of a model of the pool unit, from which the general scheme of the structure is easily seen. The large window occupies the southerly wall. The banked seats for spectators occupy the sloping area opposite it; entrance to them is by a staircase in the enclosed section at the upper left corner of the interior view, and then by the aisle above the seat bank. The vomitories indicated by black areas in the model have subsequently been eliminated from the design so that seating might be simplified. Every seat has a good view of the entire pool surface.

The great window which is a feature of the elevation of the building, and which emphasizes the aesthetic possibilities of functional architecture, has been the center of careful sun studies. As a result, it has been so placed and the building has been so oriented that in the winter during the middle of the day the pool will receive sunlight over almost the entire water surface. In the summer, however, the sun will reach only the deck on the south side of the pool. Swimmers thus will have the light and warmth of the sun during that part of the year when they most need them, and will be protected from them during the months when a swim is the best answer to the perennial question of how to stand the heat.

The general problem of keeping swimmers warm enough and spectators cool enough has been carefully considered from other points of view as well. Heating coils in the area surrounding the pool and in the ceiling over the pool itself have been calculated and will be placed so as to give a lower air temperature for spectators and to assure comfort for swimmers by direct radiant heat. Along the great window, double glazing will be employed up to a height of ten feet, so that warm air will flow between the inner glass screen and the window itself, tempering the cold air from the surface of the window and thus safeguarding swimmers against dangerous drafts. In the design of the heating, James Holt, '19, Associate Professor in the Department of Mechanical Engineering, has acted as consultant, thus joining Professor Walter C. Voss, '32, Head of the Course in Building Engineering and Construction, who has advised on materials and practices; Donald W. Taylor, '34, Assistant Professor of Soil Mechanics in the Department of Civil and Sanitary Engineering, who helped in settling some of the very difficult problems posed by the soil conditions encountered in the site; Kenneth C. Reynolds, '25, Associate Professor in that Department, who dealt with the unique problems in hydraulics presented by the design of the pool; Thomas R. Camp, '25, Associate Professor in the same Department, who designed the filtration system which will assure purity and freshness in the water where the swimmers disport themselves; and Parry Moon, '27, Associate Professor of Electrical Engineering, who advised on questions of illumination.

For the underwater observation window which has been incorporated in the design, engineers are exploring the possibility of employing glass rendered "invisible" by the film-deposition method which has been worked out by C. Hawley Cartwright, instructor in the Department of Physics, and Arthur F. Turner, '29, of Bausch and Lomb Optical Company. The proposed window has been checked by Harold E. Edgerton, '27, Associate Professor of Electrical Measurements, noted for his work with high-speed photography. It is expected that high-speed photographic studies of swimmers in action, made through this window, will be a useful adjunct of the Institute's coaching program. The window, about 15 feet from the deep end of the tank, on the north, is reached by means of a spiral stair from the observation office and coaches' rooms.

A characteristic of the Briggs Field House that has brought much appreciation is its departure from mere filing-case green and operating-room white in its interior color scheme. The same warmth of color which marks it is to be used in the swimming-pool building and, later, in the expansion from this unit to the athletic center which is the ultimate goal of the alumni recreational project. The tanks themselves, of course, will be of white tile. Elsewhere, glazed brick and tile which combine colorfulness with low maintenance will be used. The pool room will have walls and ceiling of a warm light gray, with a six-foot dado of faience tile in a rich eggplant shade around the pool deck. The decks are to be of light gray tile, and copings and other accents will be of light clear yellow. Facilities for women students are to employ a gray-green glazed brick and (Continued on page 82)

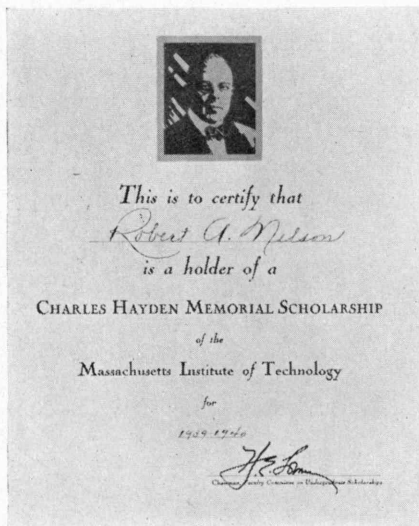
PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

With an enrollment of 497, Chemical Engineering is still the largest Department at the Institute, although it has 27 fewer students than a year ago. In second place, Mechanical Engineering, with 455, has replaced Electrical Engineering, which has 432 enrolled. Business and Engineering Administration is again fourth, with 251. Other Departments rank in the following order: Aeronautical Engineering, 245; Chemistry, 194; Naval Architecture and Marine Engineering, 181; Physics, 152; Metallurgy, 124; Civil Engineering, 117; and Architecture and City Planning, 108.

TECHNOLOGY'S part in the government's program in the Civil Aeronautics Authority's plan to teach more than 10,000 American students to be airplane pilots, will include the ground-school training of about sixty Institute students this winter. Methods of selection and training are following closely the requirements that were established in the experimental program which during last spring provided ground-school instruction for twenty students.

Under the direction of a committee of which Professor Richard H. Smith, '18, is chairman, courses will be given covering briefly the history of aviation, civil air regulations, navigation, meteorology, parachutes, aircraft, theory of flight, engines, instruments, and radio. Flight training, which began last month at the East Boston Airport, will be continued in conjunction with the ground school until weather becomes too cold, and will be concluded in the spring.

In selecting the sixty students to take the training, the committee scrutinized the physical and academic records of each applicant to make certain of his ability to maintain reasonable scholarship in addition to a liberal amount of extracurricular activity. Slight prefer-



To the first group of young men to win awards of the Charles Hayden Memorial Scholarships, J. Willard Hayden, President of the Hayden Foundation, presented certificates of award at a ceremony held in President Compton's office on November 7. These scholarships, established last year by the Hayden Foundation as a memorial to Charles Hayden, '90, are for worthy boys whose records, show future promise in engineering under the chairmanship of Dean H. E. L. presented them to Mr. Hayden. The latter



M.I.T. Photo

in the Boston area who are desirous of attending the Institute and who, by their previous training and science. For these initial grants the Faculty Committee on Undergraduate Scholarships, 1916-17, selected twenty-six young men. They were addressed by Dr. Compton who in turn spoke briefly of his pleasure and hope that the recipients would profit by their opportunity to be trained at the Institute for their chosen careers.

ence was given to students from the Department of Aeronautical Engineering and to those who had had previous sailing and gliding experience.

Dollars and Sense

REPORTING to the Corporation on the financial operation of the Institute during the past fiscal year, Treasurer Horace S. Ford laid stress upon these facts among others: The budget adopted by the Executive Committee for the year ended June 30, 1939, contemplated a deficit of some \$50,000 which, it was planned, should be met by a draft on the Income Equalization Reserve Fund. Only half of this expected

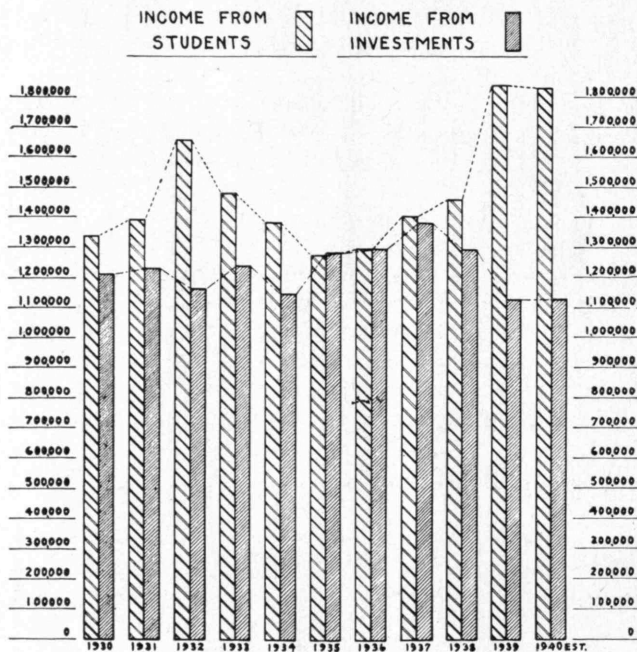


Chart 1. The Institute's annual income from students and from investments for the years 1930 to 1940

draft was necessary, however, to balance the budget. The all-time operating surplus of the Institute, after seventy-five years of operation, now stands at the large sum of \$516.85.

From students, the Institute received \$1,840,000, of which tuition fees accounted for \$1,792,000. Though the tuition fee had been increased by \$100 (20 per cent), the proportion of loans and scholarships to tuition was maintained — standing at almost 20 per cent of the whole: Eleven per cent of tuition payments — \$204,000 — came through undergraduate and graduate scholarships and awards, and 8 per cent — \$147,000 — through loans from the Technology Loan Fund. Cash payments were \$1,438,000.

Investment income for the year was budgeted at a lower figure — 4 per cent — than for 1938, and for a time it appeared that this estimate was too high. Increased dividends during the spring, however, permitted distribution of 4.02 per cent to the funds sharing the income of the pooled investments, as against 4.55 per cent in 1938 and 5 per cent the year before. The year in investments was marked by a sharp decline of ap-

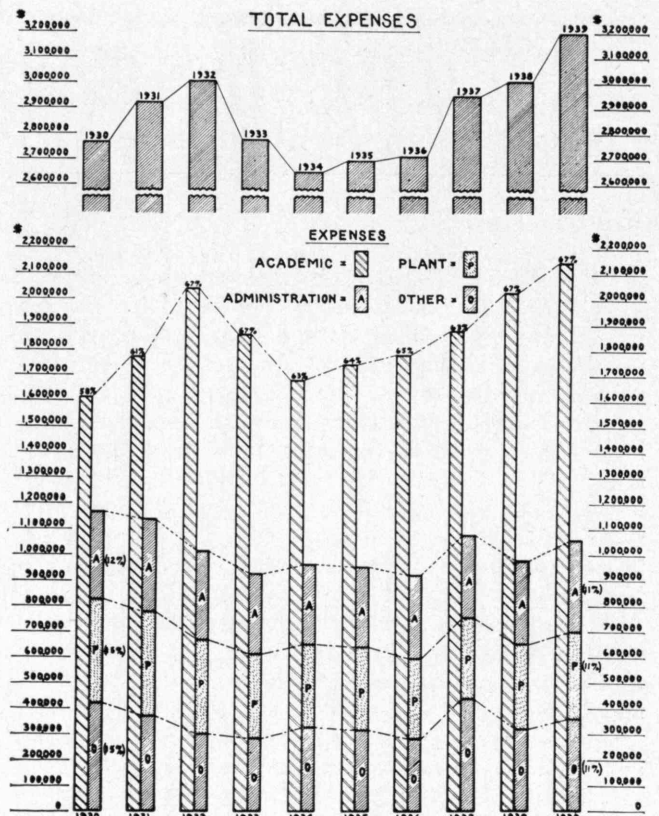


Chart 2. The Institute's annual expenditures from 1930 to 1939

proximately 8 per cent in bond holdings, with a corresponding increase in the total of common stocks and real estate. Chart 1 presents graphically the relative share of Institute income derived from students and from investments. The comparative weight of disbursements of that income in academic, administrative, plant, and other expenses appears in Chart 2. The

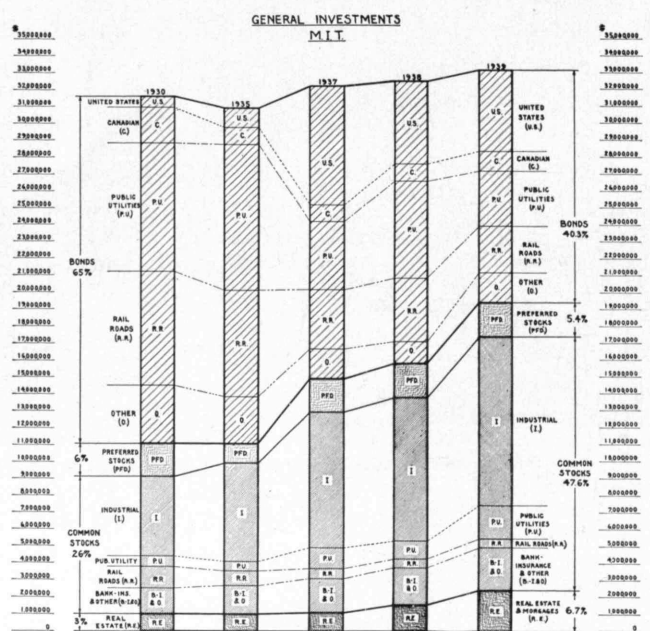


Chart 3. Distribution of the Institute's investments

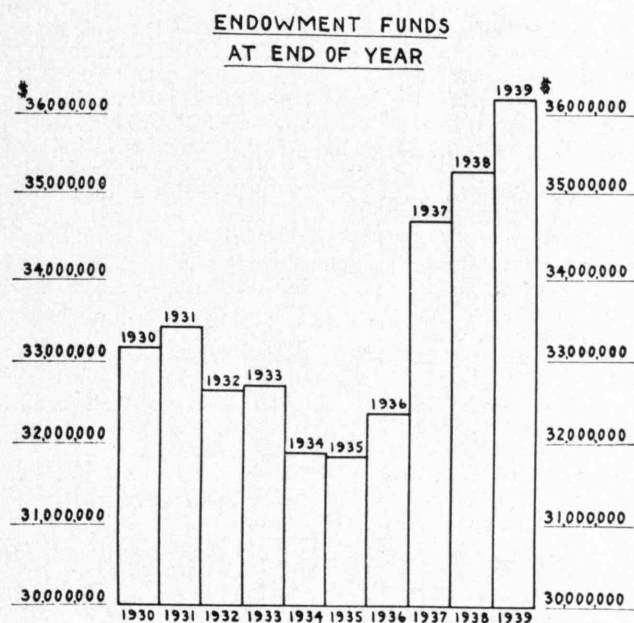


Chart 4. Marked resumption of growth in endowment funds during the past three years

general picture of the Institute's investments, in which the trend away from bonds and into common stocks is notable, is given in Chart 3.

The book value of endowment funds showed a net increase of approximately \$660,000 during the past year, to a total of \$36,232,000. The gross increase from capital gifts, principally the Bemis, Upham, and Bartlett funds, was \$1,131,500. Withdrawals for new construction and other projects and purposes reduced this to the net increase shown. Chart 4 is of interest in this connection, indicating steady increase in gifts and bequests for endowment since the low point of 1935.

The Growing Museum

ACTIVE departmental development of Technology's Museum of Science and Industry, provided for in the Institute's charter as one of the objectives of the Society of Arts and begun more than two years ago, has progressed vigorously since then. At a recent meeting of the Visiting Committee on the Museum, the members urged that the museum exhibits should, as far as possible, illustrate important research in progress at the Institute. This aim is being accomplished under the active leadership of Arthur C. Watson, chairman of the Museum Committee. The exhibits, as they grow and spread along Technology's miles of corridors, will bring out the significance of what is going on in the laboratories behind them. Faculty, students, and the public are benefited by the displays, and to the Institute's visitors particularly, the Museum is useful as an indication of progress in science and engineering. By means of the exhibits the story of research can be understood better than if observers were allowed to roam the laboratories and study the work in detail.

The exhibits interpreting research are only one phase of the Technology Museum of Science and Industry. There is to be a rightful place also for the historical ob-

jects that are museum pieces in the accepted sense of the name. The Nautical Museum, of which Professor James R. Jack is curator, has tripled in size with the contribution of numerous models and the elaborate Henry P. Kendall whaling collection, and is an outstanding example of a museum with a predominantly historical flavor.

Within the year several additions have been made to the Nautical Museum. A generous contributor is George A. Mower, '81, a graduate in mechanical engineering, who has been away from the Institute for nearly half a century, residing in England most of that time. But he keeps Technology well in mind and whenever he comes across a piece worthy of a place in the Institute's Museum, he acquires it. Because of his thoughtfulness, the Nautical Museum now possesses three carefully executed models, one of a Thames River punt, one of a Thames River single-scutt skiff, and one of a typical English railroad locomotive of the 1880's. Another Technology graduate, George F. Quinby, '77, bequeathed to the Institute an operating model of a steam engine which he himself built in his youth.

When the American branch of the Newcomen Society met in Boston in October to honor Dr. Compton, the society presented to the Institute a scale model of the first atmospheric engine, built by Thomas Newcomen in the early Eighteenth Century. For many years this type of engine was used in England to pump water. It employed steam but differed from the later Watt engine in that it employed the condensing property of the steam rather than its force of physical expansion against a piston. The steam was injected into a large cylinder and allowed to condense, thus forming a vacuum into which the force of the atmosphere drove the piston, performing the work. The model was constructed at Lehigh University and is a duplicate of the one built there in connection with the Watt bicentenary in 1936. It is now exhibited in the Institute's steam laboratory. A photograph of it appears on page 76.

Professors Frederick G. Keyes and Joseph H. Keenan, '22, are now directing construction of an exhibit which will employ mercury and naphthalene in a glass system to illustrate graphically the phenomenon of the latent heat of vaporization which plays such an important part in modern fluid mechanics. In the Department of Physics a display is being prepared to illustrate the electrical phenomena known as Lichtenberg figures, on which Professor Arthur R. von Hippel is currently conducting research and which he discusses in this issue of *The Review* (page 65). How polarized light is used in structural analysis will be better understood by the Institute's visitors after a museum demonstration of the polariscope has been prepared in the Department of Mechanical Engineering.

The case containing a pottery exhibit — and the method will be followed in many of the displays now being planned — is placed in a recess in the wall so that the glass front is flush with the wall of the corridor. The method also seems to lend an appearance of reality to cases in which pictorial displays are featured, because the lighting can more easily be controlled and the general effect is that of looking through a window on a natural scene. The pottery exhibit shows a model of a

potter's establishment of early New England days, when horse- and hand and foot power were used for grinding and for running turntables.

Students, as well as Faculty and Alumni, have taken no small part in the building of the Museum of Science and Industry. As was reported to Review readers in April (page 262), the headquarters of the student work on the Museum are at the Hobby Shop, where many of the exhibits, particularly the painstaking models, are being built. Some of the hobbyists who delight in doing things with their hands often take time out from their personal projects to lend a hand in the construction of museum models and thus leave the mark of their own craftsmanship on exhibits which will become a part of the future Technology atmosphere.

Like Father

SONS may be like fathers in the selection of a college but are unlike fathers in their choice of courses, a study of the paternal statistics of this year's freshman class seems to reveal. Forty-one sons of Institute graduates entered Technology this fall, but only ten of these sons are planning to follow their fathers' footsteps beyond the registration desk. And only a few of the remaining thirty-one enter fields similar to their fathers'.

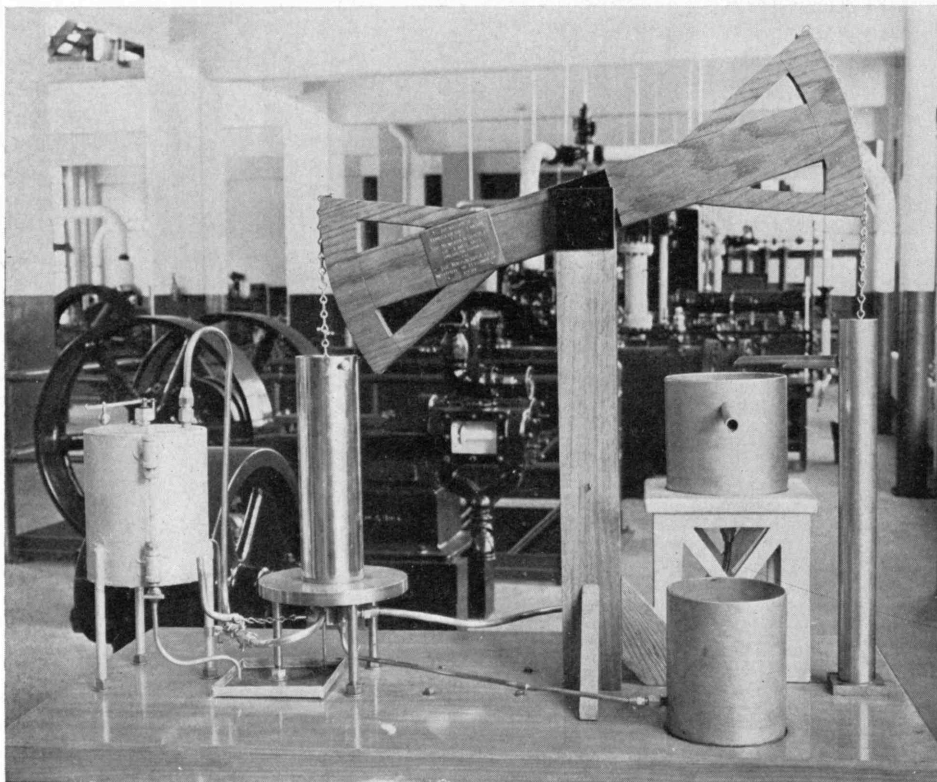
In four families the trend is definitely from pure to applied science as between father and son, and in four others the reverse situation exists. As an aeronautical student, one son figuratively has his mind in the clouds, whereas his father dug deep in the ground for his training in mining engineering. One father who trained in electrochemistry has a son who has his mind set on architecture. In another family, architectural father is represented by aeronautical son. Here is the list:

Father

Alfred B. Babcock, '08, X
Morgan Barney, '00, XIII
Ellis W. Brewster, '13, II
Prescott J. Clapp, '06, II
Ernest C. Crocker, '14, XIV
Lawrence T. Cummings, '12, VI
Philip W. Dalrymple, '12, II
Albion Davis, '13, I
Luther Davis, '10, VII
Waldo F. Davis, '08, II
John M. DeBell, '17, X
Thomas H. Derby, '21, I
Lammot du Pont, '01, I
Samuel S. Eisenberg, '15, XIV
LeRoy B. Gould, '03, VI
Louis Grandgent, '11, IV
Thomas M. Gunn, '05, XIII
Erwin Harsch, '20, I
Walter H. Hildebrand, '11, I
James Holt, '19, II
Albert J. Hoyt, '14, II
Clive W. Lacy, '15, VI
Walter S. Laird, '09, III
Charles J. Lawson, '20, VI
Joseph M. Livermore, '15, I
Charles W. Loomis, '16, XI
Raymond H. Lord, '11, VI
Edward H. McLaughlin, '18, XV
William J. Mixer, '02, VII
Clifford L. Muzzey, '14, VI
Hugh G. Pastoriza, '07, VI
F. Gardiner Perry, '09, VI
Everett E. Place, '15, VI
Edgerton G. Polley, '17, II
George H. Powell, '04, XIII
Maurice R. Scharff, '09, XI
Henry K. Spencer, '09, II
Seymour J. Spitz, '14, X
Frederick A. Stearns, '17, II
Donald R. Stevens, '11, II
Richard H. Wheeler, '14, IV

Son

Alfred B. Babcock, Jr., X
John Barney, XIII
Spencer H. Brewster, XV
Charles M. Clapp, I
E. Charlton Crocker, XV
Lawrence T. Cummings, Jr., II
Philip W. Dalrymple, Jr., XIII
Hartwell Davis, XIII
Luther Davis, Jr., VII
Waldo F. Davis, Jr., XV
John M. DeBell, Jr., XVI
Thomas H. Derby, Jr., VII
Reynolds du Pont, II
Eugene R. Eisenberg, IV
Gilbert B. Gould, VI
Roland Grandgent, XVI
Lauren T. Gunn, II
John E. Harsch, X
Walter H. Hildebrand, Jr., XV
James Holt, Jr., II
E. Donald Hoyt, II
William R. Lacy, XV
William M. Laird, XVI
Charles J. Lawson, Jr., XV
Richard S. Livermore, V
Charles Clark Loomis, VI
Edwin R. Lord, XV
Edward H. McLaughlin, Jr., XII
Henry F. Mixer, XV
Benjamin C. Muzzey, XVI
Hugh G. Pastoriza, Jr., VI
Frederick G. Perry, Jr., X
E. William Place, XVI
Philip E. Polley, V
Arthur C. Powell, X
Samuel A. Scharff, VI
Kendall H. Spencer, II
Seymour J. Spitz, Jr., X
Frederick P. Stearns, XV
Donald R. Stevens, Jr., II
Robert H. Wheeler, VI



M.I.T. Photo

A scale model of Thomas Newcomen's atmospheric engine, used in England from 1712 to 1775, presented to Technology by the American branch of the Newcomen Society, is a recent addition to the Institute's Museum. The model, a gift of the New England members of the society, was built at Lehigh University and is a duplicate of one constructed for the Watt bicentenary in 1936.

Waldemar Lindgren, 1860-1939

A LONG and distinguished career in economic geology came to a close on the morning of November 3 with the death of Waldemar Lindgren at his home in Brookline, Mass. He was seventy-nine years old and had been a member of the Faculty of the Institute since 1908. Prior to his retirement with the rank of professor emeritus in 1933, he was for twenty-one years head of the Department of Geology. During those two decades the Department attained a position of international prestige. Even after his retirement, Dr. Lindgren maintained an office at the Institute and was active until a few weeks before his death. He was known in this country and abroad as one of the world's leading authorities on mining and economic geology and had contributed notably to the literature of his profession.

Dr. Lindgren was born in Kalmar, Sweden, the son of Johan Magnus and Emma Lindgren. In 1886 he married Ottolina Allstrin of Göteborg, Sweden, who died in 1929. Dr. Lindgren came to America in 1884 to join the United States Geological Survey as assistant geologist. Later he was made a staff geologist and in 1911 was appointed chief geologist of the survey. In 1908 he began lecturing at the Institute and in 1912 was appointed William Barton Rogers Professor of Economic Geology and head of the Department of Geology.

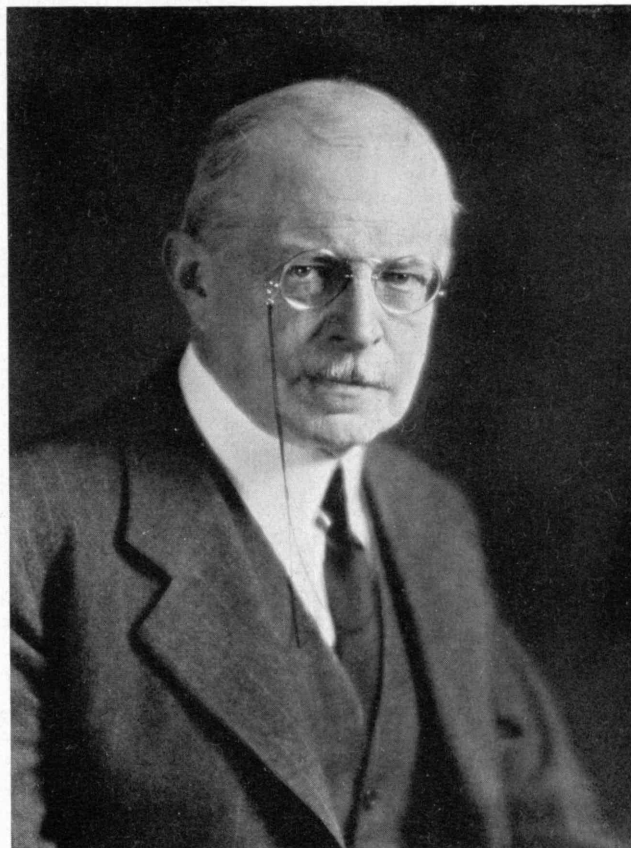
Dr. Lindgren's achievements were recognized in 1937 when the Geological Society of London awarded him the Wollaston Medal, the most distinguished international honor in the field of mineralogy, which is given "to promote researches concerning the mineral structure of the earth. . . ." Among other great men to receive this medal was Charles Darwin.

Dr. Lindgren's first university degree was that of mining engineer, awarded by the School of Mines of Freiberg, Germany, in 1883. After he came to Technology, his outstanding work was recognized by Princeton University, which conferred upon him in 1916 the honorary degree of doctor of science. When the same honorary degree was given to him by Harvard University in 1935, President Conant called him "a geologist to whom all men turn for knowledge of the metallic secrets hidden in the rock." The Lindgren Library of mining and geology at Technology was named in his honor.

Dr. Lindgren was a member of the National Academy of Sciences, the Geological Society of America, of which he was president in 1924, the American Association for the Advancement of Science, the American Institute of Mining and Metallurgical Engineers, and the Mining and Metallurgical Society of America. He also belonged to the University Club and the Cosmos Club. He was the author of the well-known book *Mineral Deposits* and of many reports on mining and geology in government publications and technical journals.

The President's Report: Part II

REGISTRATION, research, construction, and student accommodations are discussed by President Compton in the second section of his report to the Corporation, summarized in *The Review* this month.



Waldemar Lindgren

The disturbing consequences of the European situation as they affect educational institutions were commented upon by him in the opening portion of his report, presented to Alumni by *The Review* in November. Various operations of the past year are touched upon in this month's summary. Financial details appear on page 74 in extracts from the report of Treasurer Ford.

Analysis of trends in gifts to Technology in comparison with gifts to other institutions, Dr. Compton observed, is not altogether cheerful in spite of the fact that the total of gifts received during the past year is encouraging. During the eight years of the depression period following 1929-1930, he pointed out, nine educational institutions surpassed the Institute in the total of gifts and bequests received, and if gifts alone are considered, as distinguished from bequests, twenty-five institutions are found to have exceeded Technology's record.

"Under our plan for the stabilization of enrollment," Dr. Compton continued, "now in its fourth year, the quota aimed at for freshmen is 600. That is practically the number now registered. These freshmen were selected from among 1,621 qualified applicants, a gain in applicants over last year of approximately 100. Although this year's entering class is the most carefully selected group yet admitted, and the present selective plan over the past several years has brought about a marked improvement in the all-round quality of our student body, our Admissions Office is seeking further to increase the number of good applicants and thus the degree of selectivity. The Honorary Secretaries and other Alumni

are participating effectively in this effort to increase the number of thoroughly qualified applicants, in addition to their indispensable work of interviewing those who have applied.

"The extent to which the Institute has become a national and international institution is indicated by the geographical distribution of our students last year. Seventy per cent came from outside Massachusetts, 60 per cent from outside New England, 33 per cent from outside the North Atlantic states, and 7 per cent from outside the United States. The number of foreign students registered — 231 — represented forty-three foreign countries, the largest numbers representing Canada, China, the Philippine Islands, and England, in that order. Despite the European war, the number of graduate students is again the largest in the history of the Institute, and in this group we find additional evidence of wide distribution. Of the graduate students registered last year, less than 25 per cent received their bachelor's degrees from the Institute, and altogether 220 colleges were represented.

"While no major addition to our educational buildings has been made since the occupation of the magnificent William Barton Rogers Building a year ago, we have completed or begun three small structures important to our research program, opened a notable new museum in the Rogers Building, provided new quarters for our women students, dedicated a new field house and athletic field, and begun construction on the first unit of our projected athletic center (page 71).

"Of the research units, the building housing the cyclotron has been completed, and the cyclotron itself is virtually ready for operation, having been built in record time from funds provided by the John and Mary R. Markle Foundation. This instrument will be used for the artificial production of radioactive chemicals to be utilized in medical and biological research in co-operation with neighboring institutions.

"The second research unit, upon which construction was begun in September, will house another instrument important in our high-voltage program and, like the cyclotron, of great value to medicine. This is a three-million-volt x-ray and cathode-ray generator destined ultimately for use in cancer therapy after the Institute has completed a study of its characteristics and made some physical and biological tests of its utility. Made possible by a grant from the Godfrey M. Hyams Trust, this generator will be the third of a series of constantly improved high-voltage x-ray generators of the Van de Graaff type built at the Institute for medical use; the other two are now in successful operation.

"The third new building for research is the small solar-energy laboratory which is to be used in the program, now under way at the Institute, financed from the Godfrey L. Cabot Solar Energy Fund (page 84).

"Those who have visited the Dard Hunter Paper Museum, formally opened on Alumni Day last June, will agree, I am sure, that it is worth a pilgrimage and that it is one of the most charming spots in Boston. Dr. Hunter is known throughout the world as an authority on the history of paper and papermaking, and the collection which he has assembled and which he displays in this museum is the most complete in existence.

"During the year still another amenity was provided within our present buildings, this time specifically for our women students, who number half a hundred. For years these students have had no adequate headquarters; the small Margaret Cheney room provided only partially for their needs. Consequently, when we expanded into the new Rogers Building, space was set aside on the third floor of Building 3 for a new Margaret Cheney room, and this past spring funds became available to adapt the space. The new quarters, designed by Florence W. Stiles, '22, newly appointed Adviser to Women Students, include a lounge, study room, kitchen, and locker room, all attractively and comfortably furnished. The general requirements were set forth in an earlier study by a representative committee of alumnae, women students, and faculty wives."

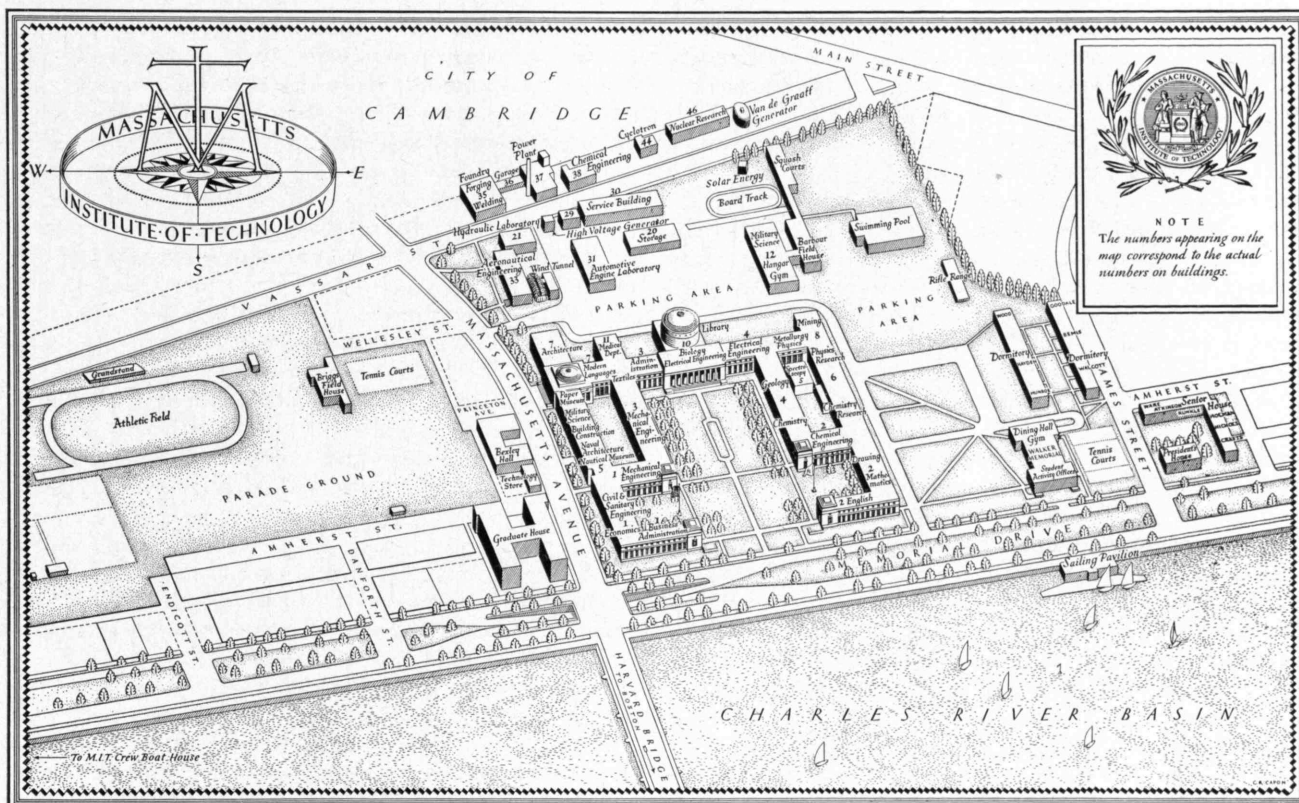
Greetings and Salutations

MEETING for its 208th session — the first of this academic year — the Alumni Council in October had opportunity to greet a new President of the Alumni Association, Frank B. Jewett, '03, a new Dean of Architecture, Walter R. MacCornack, '03, and a new Dean of Humanities, Robert G. Caldwell. President Jewett, handling his first presidential task with the aplomb of a veteran, expeditiously disposed of the mass of business and reports that had accumulated since the last meeting — No. 207, held in May — and presented Deans MacCornack and Caldwell as speakers of the evening.

The business included a survey of current events at the Institute by Charles E. Locke, '96, Secretary of the Alumni Association, who announced that the graduate-student body is to be represented hereafter at meetings of the Council. Undergraduate representatives have been in the custom of attending the meetings for some time. H. B. Richmond, '14, former President, reported for the Committee on Historical Collections that plans for a memorial to Richard Cockburn Maclaurin, President of the Institute from 1909 to 1920, are progressing well. The memorial will be erected in the Main Lobby, will resemble in general composition the memorial to George Eastman in the lobby of the Eastman Building, and will contain an appropriate commemorative statement. Professor Harry W. Gardner, '94, Professor Henry G. Pearson, and Harry J. Carlson, '92, are actively concerned in the design and preparation of the memorial. Brief discussion of the 1939 Alumni Day led to consideration of plans for the event in 1940, which are already taking shape.

A bright spot in the evening occurred when Mr. Richmond, on behalf of an unnamed group of well-wishers, presented Secretary Locke with a meerschaum pipe of truly Gargantuan proportions. A serious omission, which the well-wishers may have plotted, was their failure to present with the pipe enough tobacco to fill it at least once — about a half pound.

Dean MacCornack, discussing opportunities for graduates of the School of Architecture, told the Council of the obvious necessity for rebuilding which exists in America, pointing out the need for slum clearance in major cities, the rapid deterioration of some cities as evidenced by comparative tax figures, the lag in con-



The expanding Institute as it is delineated in a map which has been prepared for distribution to visitors

struction of dwellings. No booms, he declared, are needed; the prospect for normal, healthy growth is good enough. The outlook for architectural graduates is, for these reasons, brighter than it has been in the past fifty years, not for the reason that there will be any more construction in any given period than has been true in some periods in the past, but because of the challenge to develop our rebuilding program along new lines.

Reminiscing about some of his experiences during service with the diplomatic corps, Dean Caldwell told of efforts, in which he participated, to stock with food fish Lake Titicaca, loftiest lake in the world, which lies in the Andes Mountains in Bolivia and Peru. After various difficulties had been met, the project had to be held up for an entire year because the oversize dimensions of shipping cases used for the transport of spawn had prevented shipment in refrigeration, so that most of the consignment was unusable upon receipt. The importance of minute detail, he emphasized, was made clear by the way in which this one small physical fact interrupted the course of a long series of political, economic, and diplomatic arrangements. He held, however, that life is more than a matter of mere accuracy; truth, beauty, justice, are essential elements in it, for which reason emphasis upon humanistic training in conjunction with work in science and technology is of basic importance.

The May meeting had been busied primarily with the presentation of nominations for Departmental Visiting Committees, of annual reports by officers of the Alumni Association, and of reports from committees and Advisory Councils.

Visiting Committee Reports

CORRELATION in the architectural curriculum is stressed in the report of the Corporation's Visiting Committee for the School of Architecture. The Committee on the Library emphasizes the work of the Faculty Library Committee. The Committee on the Department of Civil and Sanitary Engineering discusses manifold activities of the Department.

SCHOOL OF ARCHITECTURE*

THE meeting before this having been in the old Rogers Building in Boston where the interests of the Institute had centered for so many years, the adequate and delightful new quarters in the main group of the Technology buildings in Cambridge were a subject of comment when the Committee convened for 1939. Dean Emerson expressed a strong feeling that the bringing together of the architectural and engineering schools made new and interesting possibilities in education. It seemed to him to give the School of Architecture a unique advantage in the teaching of architecture, tending to differentiate it from other architectural schools in the unusual resources of the immediately adjacent scientific and engineering courses in fields closely related to architecture. Conspicuous among these are the Albert Farwell Bemis Foundation for research in housing, the Course in Building Engineering and Construction, the

* Members of this Committee for 1938-1939 were Harry J. Carlson, '92, Chairman, William R. Hedge, '96, Frederick W. Garber, '03, Will Rice Amon, '22, Sidney B. Waugh, '27, A. Lawrence Lowell, C. Clark Zantzinger, Jr., and L. Andrew Reinhard.

Course in Illuminating Engineering, the advanced structural laboratory, courses in acoustics, ceramics, and textiles, the Department of Business and Engineering Administration, the courses in Geology which apply to buildings and foundations, and the Institute's museums of materials and processes.

All of these opportunities not only exist but are a means of broadening and enriching the educational opportunity offered to the architectural student. To make these resources effectively available, a student in good standing, upon the completion of his third-year work, is at liberty — in consultation with the Head of the School — to take such of the work offered in these other fields as his earlier preparation permits in substitution for equal hours in the required curriculum. Seminars in these different fields are part of the regular graduate work conducted, in conjunction with our own teachers, by the Heads of the Departments in question and applied to a current or basic design problem.

Another advantage of the new location, especially for the graduate students, is the fact that the Graduate House, with its club and residence facilities, is almost opposite the School. A new bulletin which will more fully give to prospective students a picture not only of the curriculum but also the life and activity of the Institute, is now in preparation. A shop has been opened for any student work that requires tools; here models of specialties can be made by the student.

Obviously the major purpose of the teaching is so to equip the students that upon graduation they may be provided with such methods of work, habits of thought, and standards of performance as will enable them to cope competently with current professional problems. What was adequate in curricula or methods of twenty years ago is evidently unsuited to the needs of today, but the fundamental principles of good architectural design are the same, and will always be the same. Such touchstones as economy of space, directness of circulation, simplicity of construction, convenient interpretation of spaces, suitable character and proportion, are as properly applied to the buildings of this century as to those of any previous age.

In the belief that this is fundamentally true, our methods and curricula from year to year have echoed the changing needs of a changing civilization, of new materials, and of new methods of construction. We have thus endeavored to keep our minds open to new opportunities and resources without being carried away by current fads and fancies, convinced that in evolution founded upon considered experience we shall find the safest and the most inspiring guidance for our teaching.

Correlation of the different subjects in our curriculum is properly the keynote of our teaching effort. The drafting room offers the best opportunity for such correlation, providing, as it does, a natural and informal chance for a free exchange of ideas among students themselves, and between teachers and students, in application to specific subjects of interest provided by problems in design, construction, freehand, modeling, color, and history.

Perhaps the significant aspect of our effort at correlation lies in the deliberate policy of having design, in the broadest sense of the word, taught not only by those

particularly selected for that purpose but also by teachers whose primary responsibility is in freehand, construction, color, or history, so that the student may realize, through the combination of the teacher's activities as well as through the actual emphasis of his teaching, the vital importance of the interrelation of the subjects under consideration. Thus architecture is sensed as a unit and not a mere collection of interesting items.

This policy applies not only to the members of our own staff, all of whom serve on our juries, but also to teachers in such courses as materials, geology, mechanical equipment of buildings, and so on. As a further step in the same direction, the heads of the School meet members of every class once a term to discuss with each student the different subjects in his curriculum in relation to what lies ahead and in relation to one another, giving opportunities for questions which clarify such relations.

A new Institute faculty committee has been formed, consisting of John E. Burchard, '23, from the Bemis Foundation, Lawrence B. Anderson, '30, from the School, John B. Wilbur, '26, from Civil Engineering, Robert S. Williams, '02, from Metallurgy, and George R. Harrison from Physics. These men are to aid the School both by keeping it abreast of research activities outside its ken which would be of value and interest to its students and by helping to establish with those conducting this type of research such relations as will broaden the outlook for advanced students of architecture.

We would call particular attention to the various exhibitions of the School, both temporary and permanent; these line the corridors, staircase, lobbies, and various exhibition rooms of the School. It is hoped that these exhibitions will have interest not only to the architectural students but to the Institute as a whole.

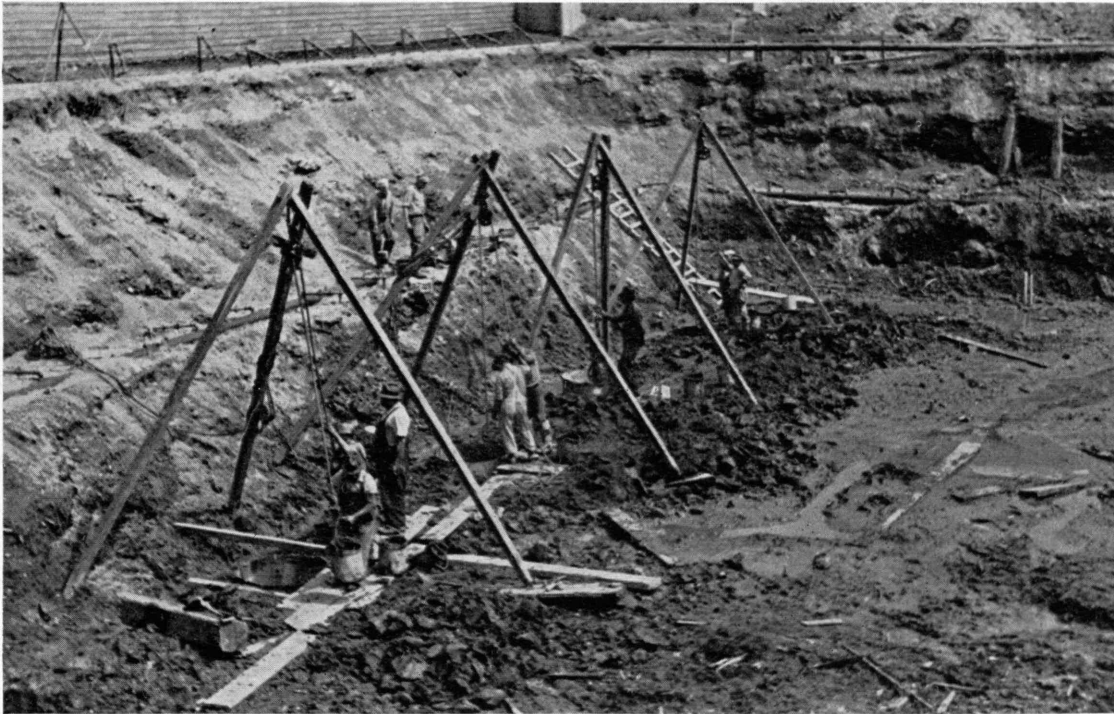
Many regrets were expressed that Dean Emerson had decided to retire at the end of the school year of 1938-1939. The School thereby suffers a loss that we all feel keenly. Dean Emerson was not only a forceful and well-directed executive but endeared himself to all who came in contact with him whether Faculty, students, Alumni, or the general public. He gave of himself unstintingly and in this he was ably seconded by Mrs. Emerson, who took a great interest in the School and the students.

LIBRARY*

THE Committee held an all-day meeting with the Faculty Library Committee, the Librarian, and the President of the Institute. All phases of the Library's problems were discussed, branch libraries were visited, and the future activities of the Faculty Committee and of the Friends of the Library were considered.

Easily the most important development in library matters at the Institute in the past year has been the revitalizing of the Faculty Library Committee by Professor Ernest H. Huntress, '20, and his associates. The Faculty Committee during the past year held eleven regular meetings and four (*Continued on page 90*)

* Members of this Committee for 1938-1939 were Harlow Shapley, Chairman, William H. Bovey, '94, Frederick W. Garber, '03, Harrison W. Craver, Mark A. De Wolfe Howe, Milton E. Lord, and Henry B. Van Hoesen.



FOUNDATION EXCAVATION FOR M.I.T. SWIMMING POOL
PREDRAINED BY THE
MORETRENCH WELLPOINT SYSTEM

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DIVIDEND Too

The COOP

in Harvard Square

"... THE WATER'S FINE"

(Continued from page 72)

are to include curtained dressing cubicles equipped with dressing tables. Space for a matron is also to be provided. The public areas of the building will be done in face brick, yellow glazed brick, and painted plaster.

Lighting designs call for the use of incandescent lights, with distribution by means of uniform spacing of individual sources over the whole seating and pool areas. The lights are to be recessed, with louvered openings. The building will be wired for electrical timing of events and for a public announcement system. Acoustic material, however, is to be used to reduce noise reverberation to the point where spoken instructions or announcements can be understood easily. Wherever necessary in glazing, tempered glass is to be used as a precaution against accidents.

The exterior of the pool unit will be simple and direct, yet will possess much architectural interest, to which the great south window will contribute greatly. The enclosed area stretching southward from that window outside the building is a garden area planned for future completion as space for recreation and for sun-bathing. The exterior walls of the building are to be of buff-yellow brick as in other Institute buildings. Stones from the old Rogers Building on Boylston Street, Technology's home for so many years, are to be incorporated near the front entrance of the present structure and, suitably inscribed, will serve to keep alive the spirit of "the Tech on Boylston Street."

So much for the present. In any educational institution, building programs must always be carried on with an eye to the future if they are to be sensible. This restriction, moreover, applies with as much force to recreational and athletic facilities as to buildings of primarily scholastic or research purpose. How the pool unit fits into the long-range scheme for the alumni athletic center at Technology is shown in the plan on page 71. Expansion in future may take any of the several courses indicated by the letters accompanying the numbers identifying units in the plant. Hence it is possible to fit further building to both needs and funds.

Thus the second step has been taken in the alumni program, and one of the chief longfelt needs of Institute athletes is being met. Of the \$429,000 pledged by Alumni for this contribution to Technology's desire to build the man as well as the mind, \$385,000 have already been paid in, and redemptions are daily being received.

BUILDING activities at the Institute this fall included other interesting projects as well. Notable among these is the construction of an experimental house designed to trap the sun's heat falling on the roof and to store it in the basement for future use. This attractive cottage is a laboratory instrument for use by a committee (of which Hoyt C. Hottel, '24, Associate Professor in the Department of Chemical Engineering is chairman) who are directing the program of research into the utilization of solar energy — research made possible by a gift of nearly \$650,000 donated last year by Godfrey L. Cabot, '81. (Concluded on page 84)

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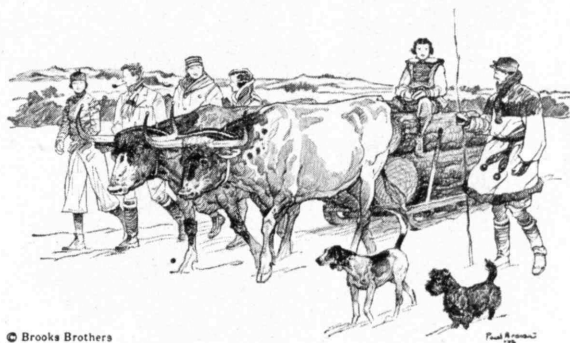
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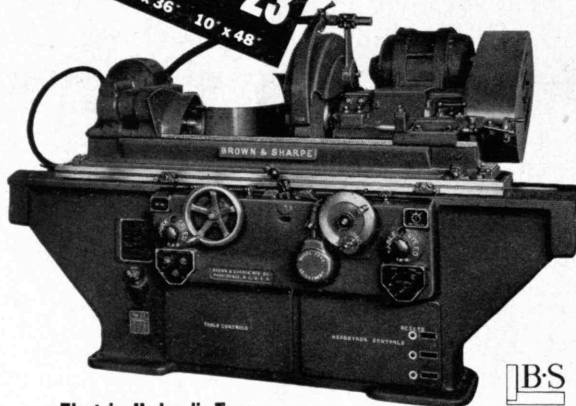
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M.I.T. Photo

Something new in laboratories, this attractive cottage is essentially
an instrument for the study of ways of utilizing solar energy.

"... THE WATER'S FINE"

(Concluded from page 82)

Winter house heating, summer air conditioning, and power generation are among the uses for solar radiation which are to be studied in this aspect of the investigation. The laboratory house contains in its basement a large well-insulated water tank which can be used for ironing out the fluctuations in heat collected from so variable a source as is the sun. The heating system in the building consists of a method of forced air circulation so arranged that the flow of air can be either over the hot tank surface or through the coils of a refrigeration system to be installed later. Operating on the absorption principle, this refrigerating system will utilize sunlight as its heat source. Though the amount of solar heat in New England is so small as to make domestic heating by solar radiation uneconomical, it is large enough to test the efficiency of heating systems for localities where the climate is less rigorous.

Several types of energy collectors, or heat traps, are to be tried in the research program; first attention is to be given to the shallow boxlike devices placed in a recess on the roof of the building, as appear in the accompanying photograph. The bottom of the box is a thin sheet of metal painted black to absorb the greatest amount of solar energy. Firmly fixed to the underside of the sheet is a series of small, thin-walled metal tubes which are heated by contact with the sheet and which in turn heat the water circulated through them. The box has several glass covers interspaced with dead-air regions, through which nearly all the sunlight can pass but back through which little heat can escape. The sunlight is converted to heat when it strikes the metal sheet. Beneath the box is a layer of mineral wool to prevent the escape of heat.

After the water has been warmed in the heat collector, it passes through carefully insulated pipes to the large storage tank in the basement. The tank is also well insulated and hence will lose but little heat over long periods. Depending upon the size of the tank, water can be kept hot in it by this method from a few weeks to half a year. The laboratory house was designed especially for scientific studies and not as a model domestic dwelling. It is small, as buildings go, and has a large wall surface in proportion to its volume.

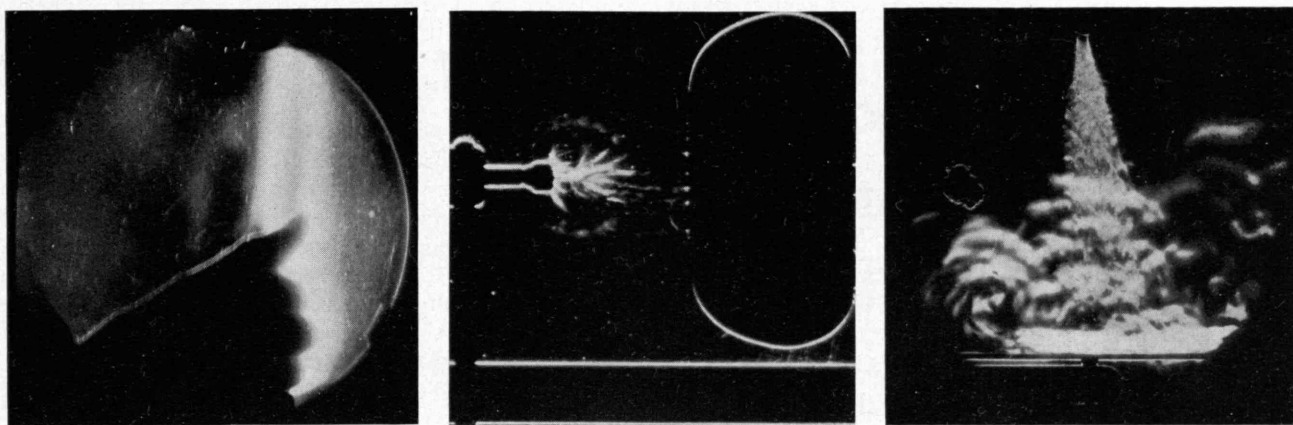


Fig. 9. Left: heat wave rising from a thumb. Center: electrical discharge from a point, surrounded by a sound wave. Right: air streaming against a plate

HOW DO INSULATORS INSULATE?

(Continued from page 67)

which is now being studied. It is proposed to extend these measurements and to include other classes of materials. Optical observation of the migration of electrons in crystals and of the destruction produced by the breakdown process has provided additional information. Figure 4 (page 66) shows the manner in which the electrons are able to travel only in special crystallographic directions. Out of this work, it is expected, a quantitative theory of the breakdown process for at least special groups of solid dielectric materials will soon become available for application.

The optical evidence of the breakdown mechanism in solids can be examined at ease, because the destruction pattern once created stays unchanged if the voltage is removed in time. In liquids and gases, the situation is more difficult; the local damage done by the breakdown is healed very swiftly by the rushing in of other molecules to fill the gaps. Hence only a photographic record made during the breakdown can preserve the story. Two methods for this work have been developed.

The first method uses the light excited by the impacts of electrons upon the molecules of the gas during the breakdown process. This light is too feeble to be photographed in detail with even the most powerful lens, but if the discharge takes place (Continued on page 86)

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HOW DO INSULATORS INSULATE?

(Continued from page 85)

directly on the surface of the photographic plate, almost every light quantum contributes to the picture, and a very detailed record of the breakdown phenomena is secured without any lens system. Figure 5 (page 66) shows the method and a typical positive and negative discharge figure. These are known as Lichtenberg figures in honor of the physicist Lichtenberg, who in 1777 made the first records of surface discharges by scattering resin dust over the charged pattern.

In the insulation laboratory an impulse generator and a special camera have been constructed for photographing these figures in gases as a function of voltage and pressure from vacuum up to 30 atmospheres. Ability to adapt this technique to such a wide pressure range is the laboratory's specific contribution to this art. Pictures obtained with this equipment in different gases under controlled conditions have given the key for interpretation of their own structure.

Directly discernible in Fig. 6 (page 67) is the way a spark develops out of the positive-discharge figure first created around a positive electrode. Single electrons found in the gas at random places have first been accelerated by the electric field applied, until in colliding with gas molecules they knock out new electrons from these particles. Multiplying themselves again and again, electron avalanches at last race toward the anode, leaving behind first the faint treelike structure of the slow positive charges. While the process expands more and more into space by new avalanches, the older tree structure carrying the current toward the electrode becomes, thanks to the electron traffic, better and better conducting until it transforms into a brilliant spark. By their structure, therefore, such sparks testify about their origin. Figure 8 at the bottom of page 67 shows another case: Negative sparks are seen to develop as a smooth stem out of electron-emitting spots on the cathode, and positive sparks, much more finely constructed, are seen afterward discharging the negative space charges produced by the electron emission. A negative figure at very high pressure is shown in Fig. 2 (page 65). This spinebone of a ghost cat makes clearly visible how the negative spark really outruns its positive follower. The admixture of electronegative gases such as carbon tetrachloride or Freon tends to suppress the far-reaching discharge pattern by immobilizing the electrons in weaker field regions as negative ions (Fig. 7).

Since the situation in three-dimensional discharges may differ appreciably from the surface breakdown observed in the Lichtenberg pictures, a second method applicable to volume discharges in any transparent medium was undertaken in the laboratory. Photography by means of the light excited by electron impacts was ruled out, because the primary stages of a breakdown process are too weak. There remained as a possibility the heat developed by the electron avalanches, creating a density change in the area affected. Photographing these heat patterns is somewhat analogous to photographing the thunder instead of the lightning stroke.

(Concluded on page 88)

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HOW DO INSULATORS INSULATE?

(Concluded from page 86)

A method employed to photograph sound waves was found to be applicable here; its sensitivity was increased, through study and experiment by the laboratory staff, to such an extent that it will give visual evidence of extremely small amounts of energy — such small amounts, for instance, as are involved in the heat wave produced from the surface of a conductor one five-thousandth of an inch in diameter and heated to one degree centigrade above its surroundings. The method relies upon an intense light source which is focused on a small, flat mirror and thence, by means of a large concave mirror, onto the sharp edge of a diaphragm. The camera, placed behind the diaphragm, receives no direct light. But if, for instance, by a discharge in the spark gap placed in front of the main mirror, the density of the air in the optical path is changed, light is bent by this disturbance sufficiently from its straight way to clear the diaphragm and reach the photographic plate. In this way the obstacle which bends the light rays becomes directly visible, as raindrops may be seen by the stray light they produce in the beam of an auto headlight. Weak discharge phenomena have been successfully photographed by this method, with high contrast, as the two photographs of Fig. 9 indicate. An adjustable delay circuit between the discharge gap and the light source makes it possible to take the picture any desired time after the start of the discharge phenomenon; for example, the discharge may be cut off at 10^{-8} second, and the picture taken at 10^{-3} second. Thus desired information about the development of the heat track is secured. The question of how much higher the sensitivity of this method can be increased is under investigation. A rise of one degree in temperature can at present be photographed. As it stands now, the method will prove very useful for gaining optical evidence about the breakdown mechanism, especially in liquids. It may even become a tool for studying much more delicate atomic phenomena.

The laboratory is also getting under way on studies of semiconductors, investigating materials which change their conductivity over a range of 10^8 mhos in response to slight changes in composition, and others whose insulating power can be destroyed by illumination and restored by heat.

THE TREND OF AFFAIRS

(Continued from page 62)

Bruited . . .

OBSERVERS of the industrial and technological scene these days have been talking in print here and there about new ways of doing old work, adaptations of old ways to the demands of new work. Among the more interesting bits from the long list usually bruited about: Reports describe inexpensive and handy flexible resistors whose wattage ratings are stepped up several hundred per cent through the use of fiber-glass cores and

braided coverings of the same material. Filaments of fiber-glass but two ten-thousandths of an inch in diameter are used as the basis for the threads subsequently worked into the cores and coverings. The high melting point of the glass is reported to make possible operation of the units at temperatures up to 1,000 degrees F., or glowing red, without deterioration. ¶ The transparent nitro-cellulose used in photographic films does beautiful work for concrete, news is, through serving as major ingredient in a new lacquer that permits casting concrete with hitherto unattainable smoothness. Brushed onto a plywood form, a gallon of the lacquer is reported to cover 500 square feet, to be partly absorbed by the plywood, and to dry with a hard, water-resistant surface which does not raise the grain of the wood. When the form is removed, only very faint impression of the wood texture appears on the surface of the concrete. Washed and dried, the form can be lacquered and reused. ¶ A French textile corporation is reported to control patents for a process for the spinning and weaving of kapok, lightest and silkiest of vegetable fibers and lacking all of the properties which render other fibers spinnable. Kapok yarn is bruited as having been woven with and without other types of yarn by a number of French mills. ¶ Textile interest also is stirred by news of a new water-repelling chemical which becomes part of the fiber to which it is applied and which cannot be removed by any known solvent. A long-chain quaternary ammonium compound, the new material is calculated to give clothing a permanent water-repelling finish which will stand laundering and dry cleaning. Yachtsmen are relieved from the task of drying sails to prevent mildew if the canvas has been treated with the new compound.

MOPPING UP THE THOROUGHFARES

(Continued from page 70)

hammer, was on his knees with an auger, boring holes in the floors to let the water drain out. A man wouldn't believe the wind could blow so hard. Pettigrew took a sheep into the house to save it and then had to hang onto its wool to keep from going by the board himself.

High overhead, the light winked on. "We saved the light out of the wreck," Pettigrew said. Avery Rock is an unwatched light now. Its situation isn't healthy for humans in a January blow. (Concluded on page 90)

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MOPPING UP THE THOROUGHFARES

(Concluded from page 89)

Such are the duties of a lighthouse tender among the thousand navigational aids of the Maine Coast. Other ships steer clear of ledges, give them a wide berth; but the *Ilex* must run in and just miss stepping on them, with her engines at full astern. She is a maid of all work. Her business is to drop buoys, but that's only a beginning. At times she keeps river channels clear by breaking ice. She runs her prow out onto the ice, and if sheer weight of ship is not enough to break through, the *Ilex* swings her derrick boom port and starboard, with a heavy granite mooring rock dangling from the sling rings. This sets up a roll and nestles her down.

She breaks out rivers, breaks out wharves, ministers to beleaguered islands. She takes off their sick, brings them shingles for their rain sheds, woods them up, coals them up, provisions them, and in summer waters them like so many flowerpots, wrestling hose up to the cisterns. With a hoe she scrapes barnacles off the soggy heels of spar buoys, and she has even been known to rescue gunners who had overstayed their time on half-tide ledges, bagging goldeneyes and old squaws.

At times she fairly staggers under the weight of supplies. There's the story of the tender *Pansy* that took a cargo of wood and piled it mountain high against the first mate's room while he was asleep. Penned in by wood, he got out through a porthole, and then a sea struck him in the face, scaring him because it tasted like the water in the ship's tanks and he thought she was going down. But buoy tenders don't go down. You might as well expect to punish a fish by drowning it. They know where all the rocks are. They are sea chambermaids mopping up the thoroughfares.

THE INSTITUTE GAZETTE

(Continued from page 80)

special meetings. Among the special meetings were an all-day one with this Committee, two with department representatives, and one with the library staff.

Perhaps the most definite item of accomplishment during the year was a change in the faculty rule relative to the composition of the Faculty Library Committee, so organizing the latter that its personnel changes less rapidly than heretofore, thus opening the way for the

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establishment of a much needed continuity of policy over a period of years. In addition, the new rule provides for improved contact between the Faculty Committee and the several Departments by official recognition of departmental representatives from whom subsequent executive boards are to be drawn. Our Committee regard this change as fundamental in the evolution of the long-range program for the development of our library system.

The Faculty Committee believe they have clarified the position that the branch libraries represent integral parts of our library system and have laid the foundation for definite action this year looking toward the establishment of a branch for the Division of Humanities. Early last year the Faculty Committee began a systematic survey of the needs of the Library, which survey is still in progress. It was guided by an outline prepared by the Librarian and has proved most illuminating.

The Faculty Committee have enjoyed very cordial relations with the Friends of the Library. Through funds provided by the Friends, one Recordak microfilm reading machine was installed in the Central Library in November, 1938, and has proved most useful. An arrangement has also been made with the Friends to provide thesis subjects in the School of Architecture calling for a study of certain physical features of the library system. The Faculty Committee now have before the Friends a proposal for dealing with the problem of procuring funds to obtain multiple copies of certain types of books.

Our Committee note with appreciation that the library budget for the current year represents an increase of nearly \$5,000 over that for the preceding year. These additional funds will help the Library to attain its proper place in American education as the leading technical academic collection in the country.

During the year the survey of the needs of the Library will be continued actively. Before long the Faculty Committee and our Committee should be able to present a clearer view of the needs and the functions of the Institute's Library. It is hoped that specific problems can be presented to the Friends by the Librarian and by the Faculty Committee—specific responsibilities for the provision of special books or manuscripts or collections of technical volumes.

So long as the Faculty Committee are as active and farseeing as at the present time, there is little need for suggestions on the part of our Committee; but it is fortunate that on this Commit- (Continued on page 92)



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THE INSTITUTE GAZETTE

(Continued from page 91)

tee to Visit the Library we have associated with us several of the leading librarians of this part of the country. The advice of these specialists is always available to us and available also to the staff of the Library.

DEPARTMENT OF CIVIL AND SANITARY ENGINEERING*

ENROLLMENT trends and generally favorable appraisal of the many kinds of work under way in the various branches of the Department engrossed the Committee, who discussed comparisons of enrollment tendencies at the Institute with those at other institutions as indicated by statistics which had been prepared for the Committee by Professor Charles B. Breed, '97.

Members of the Committee suggest the offering at the summer surveying camp of courses in seismology, geology, descriptive astronomy, practical general astronomy, development of navigation and cartography, and of avocational subjects such as photography, with appropriate credits for such summer studies.

The river hydraulic laboratory and the Cape Cod Canal model are both being used to a considerable extent by the army engineers in their regular studies and thesis work. There is need for an assistant for Professor Kenneth C. Reynolds, '25, in this division of the work.

Professor John B. Wilbur, '26, is continually extending and improving the work in the structural laboratory and has done considerable distinctive work. This laboratory is one of the outstanding accomplishments of the Department in recent years and is destined to continue to be an influence of greater importance. A brochure, giving an outline of the work so far accomplished in this laboratory, has been published. Fortunately the structural laboratory is separated from the main corridor by part-glass partitions which permit a full view of the very attractive and impressive laboratory equipment.

Under Professor Arthur C. Ruge, '33, the seismology laboratory has developed new devices in mechanical analysis of structures, and these devices have been adapted to the problems in the structural laboratory with marked effect. Professor Ruge has also devised an electrical strain gauge which relates so closely to the research work of Professor Alfred V. deForest, '11, of the Mechanical Engineering Department that this gauge has been turned over to Professor deForest for further study and application. Professor Ruge's work is an excellent example of one division of a Department co-operating to its fullest extent with other divisions of the

* Members of this Committee for 1938-1939 were Charles E. Smith, '00, Chairman, Maurice R. Scharff, '09, Randall Cremer, '12, Marshall B. Dalton, '15, William E. R. Covell, '23, Harry P. Hammond, and Brigadier General Max C. Tyler.

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same Department and with other Departments. The seismological work has been well financed for the present by an appropriation which has come to the Institute from the Carnegie Corporation through the influence of Dr. Compton.

The Committee believe, as stated before, that it may be possible to develop research relating to the effect of earthquakes on dams and similar structures which has not yet been touched by any institution and that the government agencies which are entrusted with the design and construction of large dams for flood control and for irrigation may be induced to enter co-operative research along these lines. The general project has been brought to the attention of the United States Army Engineers and is receiving consideration, although nothing definite has yet developed.

Soil mechanics is a pioneer branch which is rapidly extending its influence. Many other institutions, notably Harvard, are extending the soil mechanics divisions of their civil engineering departments. To keep the lead in this branch, additional instructors, laboratory assistants, and equipment are necessary. New developments in soil mechanics require the frequent revision and new design of equipment. Because of the many variables in soil materials and of complications which arise in the actual testing of these materials, research projects of an advanced nature often require a long series of tests before dependable results can be obtained. To develop and maintain testing apparatus which will produce the best results requires a large amount of thought, ingenuity, and work. The soil mechanics division has always been a leader in this phase of the work, many of the testing devices which have been used in other laboratories during the past five or ten years having been constructed from plans of apparatus devised in this laboratory. But while M.I.T. has contributed much, it has, because of lack of staff, been limited in the amount

of advanced research undertaken. There has been a large increase in the number of such laboratories during the past five years. The United States Corps of Engineers are contemplating setting up several more laboratories throughout the country, and are in co-operation with M.I.T. in this work. For M.I.T. to continue to hold its place in this rapidly developing branch of the profession, an increase in staff and appropriation will certainly be required.

Under the direct supervision of Professor Breed, transportation engineering seems to be having appropriate attention. Professor Breed has recently acted as a member of a board of three engineers who prepared a report to the Railway Association of Canada on annual highway costs in the province of Ontario, and a report to the Association of American Railroads on annual highway costs in the United States. The Department is continuing the policy of treating all phases of inland transportation in a co-ordinated course covering the interrelation of the different transportation agencies.

The noticeable downward trend in Sanitary Engineering graduates at M.I.T. presents a seeming paradox inasmuch as the Committee were advised that more applications than can be filled are received for graduates. This condition suggests the need for more emphasis on advising students to take this Course.

Research in brick masonry, mortars, wood, and cement is being continued in the Course in Building Engineering and Construction. Research should be extended to other materials, particularly newer building materials. The outstanding character of the work in brick masonry is evidenced by its recognition throughout the country. Professor Walter C. Voss, '32, has been retained as a consultant in this by the United States Navy Department in regard to the Navy's new medical center at Washington, D. C. (*Concluded on page 94*)

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THE INSTITUTE GAZETTE

(Concluded from page 93)

Cement research at M.I.T. is as distinctive as at any institution in the country. The Portland Cement Association, which is obviously prominent in this field, is constantly referring to M.I.T. as the place where superior knowledge can be obtained. This association has sent one of its men to M.I.T. to study the latest developments in cement research under Professor Roy W. Carlson, '39. The appropriation for this division seems adequate; its progress merely needs continued recognition and later may need more funds because it is also one of those branches which require considerable expensive and original apparatus.

In concluding its report the Committee expressed the feeling that to teach the social and economic aspects of engineering is quite as important as to teach the more technical aspects. A proper balance is important. Particular attention should be given to training students to prepare and present written and oral reports on engineering subjects.

The Committee view the dropping off in undergraduates in the Civil Engineering Course as a natural consequence of the times, coupled with the high level of tuition at M.I.T. One hundred or more institutions in the country teach civil engineering, and although some of the courses are more or less sketchy, our Course has considerable competition. Civil engineers are employed primarily when industry is expanding, a condition which has not obtained for several years. Civil engineering has not in recent years seemed so attractive a field for the young man as have aeronautics, chemical engineering, and other rapidly growing fields. The Committee see nothing in the general trend of undergraduates in Civil Engineering at M.I.T. to indicate that the Course is slipping in its reputation. On the contrary, the number of graduate students has had a considerable increase in the past few years, a fact which is convincing evidence of the standing of this Department.

The Committee believe that a study should be made and a method devised by which, generally speaking, graduate students from other civil engineering schools can get degrees in Sanitary Engineering in one year. Deficiencies of graduates of other colleges, compared with graduates of Civil Engineering at M.I.T., might be made up in the summer previous to attendance here.



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NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Public-Health Breakfast

At every annual convention of the American Public Health Association in recent years, the former students of M.I.T. have gathered at 8 A.M. on one of the days for a Technology breakfast. This year was no exception, and at the Pittsburgh meeting, October 16 to 20, the breakfast was held on Wednesday morning, October 18, with an attendance of forty-seven. Several others were absent because of committee meetings and so on. Samuel C. Prescott '94 presided and, at the end of the meal, gave a brief summary of the affairs at the Institute, the changes in administrative and faculty personnel, the outstanding researches now going on, and the developments in the Departments engaged in public-health work.

That this event has become one of the most pleasant features of these great conventions seems to be attested by the attendance and the interest manifested. A list of those present follows: Harold E. Babbitt '11, University of Illinois; Bess Exton '33, Washington, D.C.; Beatrice Hall Kneeland '29, Hartford, Conn.; Muriel F. Bliss '33, Mineola, N.Y.; Elizabeth C. Nickerson '23, Connecticut State Health Department; John F. Norton '06, Kalamazoo, Mich.; C. Wallace Bohrer '33, Rhode Island State Health Department Laboratory; Edgar J. Staff '39, Rhode Island State Health Department Laboratory; Jerome B. Trichter '37, New York City Department of Health; Clair E. Turner '17, M.I.T.; Lloyd K. Clark '38, North Dakota State Health Department; Vivian V. Drenckhahn '33, W. K. Kellogg Foundation; Melvina F. Palmer '34, University of Minnesota; Homer N. Calver '14, American Museum of Health, N.Y.C.; L. VanD. Chandler '19, Hackensack, N.J.; George B. Darling '27, W. K. Kellogg Foundation; Murray P. Horwood '16, M.I.T.; Charles-Edward A. Winslow '98, Yale Medical School; Anne Rogers Winslow '04, New Haven, Conn.; and Curtis M. Hilliard '10, Simmons College, Boston.

Also, Joel I. Connolly '16, Board of Health, Chicago; Ralph E. Tarbett '05, United States Public Health Service; Alfred H. Fletcher '21, Memphis Health Department; Harold L. Lang '09, Carnegie Institute of Technology; Frederick Carlyle Roberts, Jr., '32, Arizona State Board of Health; Carl J. Bernhardt '28, Department of Health, Jamestown, N.Y.; Frank W. Manning '38, Michigan Department of Health, District Number 6, Newberry; Burt R. Rickards '99, New York State Department of Health; Keble B. Perine '22, Town of Belmont Health Department, Belmont, Mass.; B. Russell Franklin '34, Ingham County Health

Department and Michigan Training Center; Stanley H. Osborn '15, Connecticut State Department of Health; Frances Stern '13, Food Clinic, The Boston Dispensary; Mabel R. Stimpson '39, Infant Welfare Society of Chicago; Virginia B. Marston '37, Buffalo Tuberculosis Association of Erie County; William Thurber Fales '17, Baltimore City Health Department; Gaius E. Harmon '13, Herman Kieffer Hospital, Detroit; Horatio N. Parker '94, Department of Health, Jacksonville, Fla.; Charles F. Wilinsky, guest, Department of Health, Boston, Mass.; Aime Cousineau '16, sanitary engineer in Montreal; Charles L. Pool '21, Rhode Island State Department of Public Health; Bernard E. Proctor '23, M.I.T.; Henry M. Loomis '97, National Canners Association; Paul Hansen '02, Greeley and Hansen, Chicago; Millard Knowlton '18, Connecticut State Department of Health; William H. Gaub '31, Tennessee State Department of Public Health; William F. Wells '09, University of Pennsylvania; Samuel C. Prescott '94, M.I.T.

M.I.T. Association of Buffalo

At the time of this writing (October 23) the Secretary can report only that the first meeting of the season was planned for Tuesday, October 31, at the University Club. The principal speaker was to be W. V. McLaughlin, who is in charge of the Buffalo district of the Federal Bureau of Investigation. Mr. McLaughlin's topic was to be "Crime as Your Neighbor"; he is very well fitted to give an interesting talk on this subject. — JOHN D. RUMSEY '33, *Secretary*, Chevrolet Motor and Axle Plant, Station B, Buffalo, N.Y.

Dayton Technology Association

To bring the Association news up to date we offer a brief summary of the 1938-1939 season: In November we started with a luncheon at which A. W. Stevens, the major of stratosphere fame, told us some of the high lights of his visit to Poland in September of 1938. Major Stevens was sent at the request of the Polish government to assist in the preparations for the Polish stratosphere balloon flight. This ascent did not take place, as the balloon caught fire. At other meetings Dr. Meyers of the Dayton *Journal-Herald* spoke on "Economic Problems and the Engineer's Place in Solving Them"; Benjamin S. Kelsey '28, captain at the Wright Field, talked about his experiences in flying the high-speed experimental military airplanes and about some of the problems involved in designing them; Charlton D. Putnam '08, landscape engineer, described the new housing development in our city; Charles H. Paul '96 spoke about his work as construction engineer. At a spe-

cial dinner arranged with very short notice S. Paul Johnston '21, editor of *Aviation*, spoke on European aviation. We closed our season with a very successful picnic, given on the Wright Field picnic grounds through special permission obtained for us by Charles A. Ross '25, captain in the Air Corps.

Through the Association a bridge club was formed, meeting once a week at the Engineers' Club, and an attempt was made to learn contract. During the summer Joseph S. Newell '19, Professor of Aeronautical Structural Engineering at the Institute, was in Dayton; so the Association took the opportunity of holding a luncheon in his honor on August 5. Professor Newell was greeted by a large and enthusiastic crowd who were glad to hear his description of new developments at M.I.T. Mac Short '26 and Theodore W. Kenyon '24 were visiting at the time and attended the meeting. We had as our guests also Dr. Sechler of California Institute of Technology and F. K. Teichmann of New York University, professors who were working temporarily at the field with Professor Newell. — M. ELSA GARDNER '33, *Secretary*, United States Army Air Corps, Matériel Division, Wright Field, Dayton, Ohio.

M.I.T. Club of East Tennessee

The Club held an enjoyable meeting and dinner at O'Neil's Café, Knoxville, on the evening of Friday, October 13. Our guest was B. Alden Thresher '20, Director of Admissions at Technology, who was making us a second visit. Everyone was very much interested in his remarks of recent happenings and changes at M.I.T., and he answered many questions. Robert T. Colburn '23 showed some exceptionally fine colored movies that he had taken in the Great Smoky Mountains and in the gardens at Charleston, S.C.

The meeting was presided over by Dana M. Wood '06, and the following members were present: Joseph H. Kimball '94, Arthur R. Holbrook '04, Bernard R. Fuller '09, Albert S. Peet '09, Theodore B. Parker '11, Howard G. Mann '17, Oscar P. Young '20, Morris M. Bauer '22, D. M. Yambert '22, Emil Birkenwald '23, Robert T. Colburn '23, Robert B. George '23, Vancourt M. Hare '23, John C. Nowell, Jr., '23, B. E. Morris '25, Robert E. Crawford '28, Howard P. Emerson '28, William Nixon '31, Albert G. Kern '34, and Richard E. Hickman '36.

After leaving Knoxville, Professor Thresher visited Chattanooga, and our club members there took the occasion to hold an informal luncheon meeting at the Read House on October 16. In addition to Professor Thresher they had as guests Spencer J. McCallie of McCallie School and V. D. L. Robinson of the Tennessee Valley Authority. The following mem-

bers were present: Pedro P. Pizzorno '16, Thomas D. Lebby '17, Erwin Harsch '20, George E. Farmer '22, Robert S. Williams '26, Fred Chambers '31, John T. Howard '31, Sidney M. Edelstein '32, Benjamin B. Lane '32, and Clarence H. Williams '32. — ALBERT S. PEET '09, *Secretary*, Knoxville Glove Company, Post Office Box 138, Knoxville, Tenn.

Technology Club of New Hampshire

The annual meeting was held on October 6 at the Eagle Hotel, Concord, at 6:30 P.M. with a total attendance of thirty-two. Golf was enjoyed at the Concord Country Club in the afternoon, although only a few played, probably owing to the lateness of the season.

As usual, Charlie Locke '96 was the kingpin. The Club is deeply indebted to him for his assistance through the years. He brought with him Raymond Stevens '17, Vice-President of the Alumni Association, and Floyd E. Armstrong, Professor of Economics and Finance. Professor Locke stated that he was merely the driver and was not to make a set speech, but he did get the meeting off to a good start with some really new stories. Mr. Stevens gave a brief account of the doings of the Alumni Association, particularly in regard to the building program. Professor Armstrong spoke on "Some of the Economic Aspects of the Present Situation, Both in the United States and Abroad, and Their Bearing on the Future." His talk was interesting and timely, and he willingly answered the many questions put to him. We recommend him highly to other Clubs. We had expected also Samuel C. Prescott '94, Dean of Science, and were disappointed that he had an engagement which kept him in Cambridge.

Herbert D. Swift '15, our retiring President, was the host at "third base," which proved to be a very stimulating part of the program. — An entire new slate of officers was elected: Arthur J. Conner '88, President; Harold A. Smith '11, Vice-President for Manchester; Philip F. Maher '17, Vice-President for Concord; Charles P. Boyd '25, Vice-President for Nashua; Horace A. Emerson '27, Secretary-Treasurer; and Malcolm C. Mackenzie '14, Council Representative. We were very much pleased to discover that our host, the owner of the hotel, is none other than Paul W. George '22.

Those present as guests were Charles E. Locke '96, Floyd E. Armstrong, Staff, Raymond Stevens '17, R. D. Barker, Wilbur Boyd, and G. G. Shedd. Members present were William G. Abbott '06, Walter M. Africa '15, Blaylock Atherton '24, Charles P. Boyd '25, Amasa H. Castor '20, Walter D. Davol '06, Horace A. Emerson '27, Paul W. George '22, Carl A. Hall '08, Leigh S. Hall '14, Sheldon T. Hare '25, Robert W. Haskel '21, Richard S. Holmgren '19, John H. Howland '97, Samuel P. Hunt '95, Henry D. Jackson '95, Harold E. Langley '19, Roger E. LeBlanc '36, Julian Lovejoy '22, Malcolm C. Mackenzie '14, Philip F. Maher '17,

Louisa M. Norton '13, Arthur O. Roberts '04, Herbert D. Swift '15, Leigh A. Thompson '05, and George W. Waymouth '16. — HORACE A. EMERSON '27, *Secretary*, 59 Broadway, Concord, N.H.

Technology Club of New York

The annual bridge tournament of the Club started with a record turnout on the evening of October 17. Under the capable direction of Al Bassett '26, chairman of the card committee, the play-offs have progressed very smoothly, with most players still in the running for the grand prize. This has been the first tournament in many years to bring out such a large number of new faces. Among those taking part in the tournament are Alfred T. Glassett '20, William H. Latham '26, William P. Winsor '27, Robert E. Wilson '16, Asher L. Weil '01, Alexis R. Wren '19, Benjamin P. Richardson '26, James L. Cassidy '27, Michael L. Radoslovich '26, John C. Fruit '02, Elmer C. Hughes '31, and Lachlan MacKenzie '22.

The Classes of '34, '35, and '36 held a spirited dinner and get-together on October 10. Approximately forty-five persons were present, with each Class well represented. Robert M. Emery '34 acted as toastmaster, aided and abetted (as is usual at such Tech functions) by several humorous voices in the audience. After the dinner the group congregated in the taproom and renewed acquaintances over the popcorn, pretzels, and beer. Other Class Secretaries are also planning class get-togethers.

The varied activities are continuing at the Club with increasing enthusiasm and participation by members. The daily luncheons are now more popular than ever, and the special Technology table is filled practically every day. Several additional Technology men have taken rooms at the Club. Within the last two months the employment service has increased its activity with a sharp rise in the number of positions available. The board of governors and several committees are now at work preparing for the important events of the coming winter season. Since the opening of the fall season there has been a steady increase in the number of new members joining the Club. — JAMES P. EDER '34, *Secretary*, 24 East 39th Street, New York, N.Y. CONSTANTINE S. DADAKIS '34, *Publicity Committee*, 644 Riverside Drive, New York, N.Y.

Technology Club of Virginia

The first meeting of the fall season was held at the Commonwealth Club on October 10. It was our pleasure to have with us at this meeting B. Alden Thresher '20, Director of Admissions at Tech. The Institute and its doings were discussed, as well as many queries, such as "what became of so-and-so," the perennial query of all Alumni.

Plans for the coming season for the Club were discussed. The monthly luncheon meetings will continue. They are to be held at the Commonwealth Club on the last Monday of each month, from

noon until 1:30 P.M. These hours are such that men having either twelve o'clock or one o'clock lunch hours can attend the meetings. An evening meeting, to take the form of an oyster roast, was to be held in November. It is hoped that at least one more evening meeting can be held during February or March. This meeting will be either a dinner or a dance. We should like to have those interested inform us of their preference. We are anxious to hear from new Tech men in this area and from all Tech men visiting this vicinity. — JOHN J. FAHEY '29, *Secretary*, Department of Public Utilities, Richmond, Va.

Technology Club of Rochester

In Rochester we always look forward to the last Saturday in September, the date of our annual picnic and election of officers. Usually we put on our old clothes for trap- and pistol-shooting contests and a ball game between the odd and even Classes, but unfortunately, or fortunately as it turned out, we were unable this year to engage a meeting place to suit our needs. Even golf was out of the question because of inclement weather. As a result, what is usually a raucous gathering turned into a dignified business meeting held at the Oak Hill Country Club on September 30.

The high lights of the meeting were a review of the activities of the Club during the past year and the election of officers for the coming year. We have had very few dinner meetings because of our inability to obtain speakers from the Institute. Professor Locke '96 did all in his power, but either the Institute men didn't come here or they were too rushed to spare us the time. An attempt was made last June to arrange a golf tournament jointly with the Syracuse, Buffalo, and Niagara Falls Technology Clubs, but this fell through as no golf club was willing to turn over its facilities to us for a Saturday afternoon.

Our efficient chairman of the scholarship committee, John F. Ancona '03, announced the recipients of our freshmen scholarship awards of partial tuition. These men were Frederick F. McWilliams, Raymond A. Dunn, William L. Brice, and Howard L. Heydt. In the past our scholarship students have had a very creditable record and we know the new recipients will maintain this standard.

The election of officers for the year 1939-1940 resulted in the following: President, Kenneth Cunningham '22; First Vice-President, Lee McCanne '27; Second Vice-President, Gregory Smith '30; Secretary, O. Glenn Goodhand '31; Treasurer, Robert E. Smith '33; and Executive Committee Member, Edmund Miller '23 (term expires 1942). Continuing as members of the executive committee are Paul Wesson '98 (term expiring 1940) and Hugh Shirey '22 (term expiring 1941). The social end of the meeting continued far into the night in the grillroom of the club. — O. GLENN GOODHAND '31, *Secretary*, Building 12, Kodak Park, Rochester, N.Y.

Technology Club of Schenectady

The fall season of the Club opened with a dinner meeting at Hale House, Union College, on Monday, October 9. Arthur J. Tacy '27 was elected president to succeed Anthony deH. Hoadley '26. Witter T. Cook '24 and Theron C. Johnson '33 were elected vice-president and secretary-treasurer, respectively. Ralph C. Robinson '01 was renamed chairman of the scholarship committee. Following the dinner, Walter G. Whitman '17, Head of the Institute's Department of Chemical Engineering (Course X), spoke informally on the "Economic Implications of Recent Developments in the Chemical Industry." He also told the Alumni about some of the changes which have occurred at M.I.T. in recent years.

A good cross section of our membership turned out for the meeting, including some of our favorite old grads and a half dozen or so of the latest co-op students. We plan to continue the season with a series of dinner meetings, and the Club extends a cordial welcome to any Alumni or members of the Faculty who may be passing through. — THERON C. JOHNSON '33, *Secretary*, Engineering General Building 23, General Electric Company, 1 River Road, Schenectady, N.Y.

M.I.T. Club of Central New York

The opening meeting of the Club for the season of 1939-1940 was held at the University Club in Syracuse on Friday evening, September 29, with some twenty-three members and two guests in attendance. Following an excellent dinner Edwin A. Gruppe '22, President, called the meeting to order. Mr. Gruppe extended a cordial welcome to the group and commented on the unusually good attendance for the first meeting of the year, which fact was, incidentally, especially noteworthy, as our meeting coincided with the playing of the season's first football game at Syracuse University, an unusually strong attraction in this section. The President then presented an important item of business concerning the financing of the Club's activities. This has been on a hit-or-miss basis for some time. Mr. Gruppe proposed, therefore, that dues of \$1.00 a member be established. This was seconded and voted.

The principal feature of the evening was an interesting talk by Fred Barker '12, illustrated with colored movies of his visit to Europe in July and August. The talk included many of his personal experiences and observations in Germany, as well as in France and Italy, just prior to the outbreak of present hostilities. It was hard for us to believe that these excellent pictures were taken by the inexperienced amateur which Mr. Barker very modestly claimed to be. As evidence of keen interest, the group remained intact for an hour or so longer, asking Mr. Barker questions and making comments which brought out many more items of interest. The meeting adjourned about eleven o'clock. There was a feeling,

among the officers, at least, that our 1939-1940 season had opened auspiciously. — HENRY W. BLACKBURN '08, *Secretary*, 615 Fellows Avenue, Syracuse, N.Y.

Washington Society of the M.I.T.

The Society held its October meeting as usual at the Lafayette Hotel on Friday, the 20th, at 5 P.M. Edward Merrill '09, the new President, voiced his feeling regarding his shortcomings following such presidents as Edwin James '07 and H. W. Tyler '84, and asked the co-operation of the entire membership in furnishing suggestions for meetings, subjects, and speakers. As a demonstration of his desire to conform to the wishes of the members, he had already sent out questionnaires to the entire group.

Our Honorary Secretary, Henry D. Randall, Jr., '31, introduced a number of new faces, including John T. Cheney, Jr., '35; our new executive committeeman, Hewitt Crosby '03; Jules A. Larrievé '30 and his guest, A. E. Savage; Utley W. Smith '35; and Oscar C. Merrill '05. He also welcomed Minor S. Jameson '96 as representing the oldest Class present. In this respect we noted that Joseph W. Clary '96 was very modest, not mentioning his equal share to glory; in fact, both men were outranked as to Class by George W. Stone '89, Fred W. Swanton '90, and Walter I. Swanton '93, who did not gain recognition, possibly because of their more regular attendance. Randall also introduced John L. Person '32, assistant engineer commissioner. Randall reminded the membership of the six or seven scholarships awarded annually, including at least one for full tuition, asking that we keep these in mind so that proper applicants may be recommended by the Society. Our Executive Secretary, Alfred E. Hanson '14, commented upon the close vote on the subject of noon versus five o'clock meetings, asking that more members state their choice on the ballots furnished. Proctor L. Dougherty '97 remarked briefly upon Randall's theft of the introduction of his guest, Captain Person.

In introducing the speaker, Ed Merrill mentioned the natural wide interest in animals and our good fortune in being able to hear William M. Mann, director of the National Zoological Park. Dr. Mann, in beginning, mentioned that he had a very excellent lecture that would be too long to give at this time, entitled "Needs of the National Zoological Park." He also said he had been requested to bring along a gorilla but unfortunately was not able to. One gorilla, named Gee, had been the most popular inhabitant at the zoo during his time, living there three years, three months, and three days and dying amid the weeping of the children whom he had often amused. Gee was embalmed at Johns Hopkins. Lloyd's New York representative inquired regarding disposition of the carcass, stating that the insurance called for all salvage to be Lloyd's. Stating his willingness to settle the matter out of court, the Lloyd's agent received a reply from Dr. Mann

that he wouldn't give a cent but would ship the carcass to the New York office of the insurance company — at which point the matter was dropped.

Dr. Mann mentioned the excellent zoos in London, Berlin, in France and Spain, Portugal and Japan, listed the early history of zoos dating from 3500 B.C. in China and from the early zoo in Nineveh, probably the first with cages labeled. Egypt had enormous zoos but apparently didn't know how to feed the sacred oxen, as recent autopsies have indicated that all of them had rickets. Rome had tremendous zoos, at one time having seventeen rhinoceroses. Forty-eight elephants were brought back in one triumphal return from Carthage. During the Dark Ages zoos disappeared but reappeared with the Renaissance. William the Conqueror's act in bringing his pet leopard to Britain introduced the leopard in the emblems of heraldry. The first national zoo was an outcropping of the revolution in Paris. This one in Britain, ours, one in Buenos Aires, one in Russia, and one in South Africa are the only national zoos in existence at the present time.

The first Washington zoo started at St. Elizabeth's and later was transferred to the Smithsonian. A Mr. Blackburn, now fifty years with the zoo, is the oldest inhabitant of the park. Blackburn had quite a week end, leaving the circus, getting married, and quitting drink all at one time. Secretary Langley got the first land dedicated for a national zoo, although there were no buildings. Blackburn had to tie an elephant to a tree for three months before he could find a place to house him. Other interesting anecdotes included the purchase of a kangaroo from a circus on a deferred-payment plan. The time payments were made by trading guinea pigs at 15 cents each, and the zoo paid off the bill in three years. Dr. Mann also described the building of the first housing at the zoo and the progress to date. Questions after the talk disclosed that there are natural zoos, unconfined, in such places as the Belgian Congo and Sumatra and in many places in Africa, where the animals are safe provided they do not leave the unfenced zoo area. Many elephant hunters lie in wait hoping that some of the big tusks may be unwise enough to wander out of the preserve, and many men make their living by constant watch outside of the boundaries.

After the talk the Society enjoyed an excellent dinner served by the Lafayette. The following M.I.T. men and guests attended this enjoyable meeting: William M. Mann, guest, George W. Stone '89, Fred W. Swanton '90, Walter I. Swanton '93, Joseph W. Clary '96, Minor S. Jameson '96, Proctor L. Dougherty '97, Benjamin A. Howes '97, Frederic W. Southworth '00, Charles H. Stratton '00, Paul Weeks '02, Hewitt Crosby '03, Amasa M. Holcombe '04, Oscar C. Merrill '05, Edward T. Steel '05, Edward D. Merrill '09, Frank F. Bell '10, Richard W. Cushing '11, Benjamin F. Thomas, Jr., '13, Alfred E. Hanson '14, William K. MacMahon '22, James R. Morton '22,

Robert K. Thulman '22, George H. Southard, 3d, '23, Harcourt M. Wade '23, William V. Cash '24, G. Donald Fife '24, Harry B. Swett '25, Jules A. Larrivee '30 with A. E. Savage, guest, Henry D. Randall, Jr., '31, John L. Person '32, Robert H. Macy '33, Alfred H. Munson '33, John T. Cheney, Jr., '35, Utley W. Smith '35, and John Lowe, 3d, '37. — ALFRED E. HANSON '14, *Secretary*, 3424 Quebec Street, N.W., Washington, D.C. WILLIAM K. MACMAHON '22, *Review Secretary*, 818 25th Street, South, Arlington, Va.

CLASS NOTES

1871

A previous issue of *The Review* (November) contained the bare mention of the death of Charles F. Stone on May 24. Through many of his eighty-eight years Mr. Stone maintained a keen interest in M.I.T. events and developments, and we wish therefore on these pages to share with his classmates and other friends a brief sketch of his career, written from material provided by his son Percival.

Following graduation Mr. Stone taught chemistry for a year at the University of Maine and shortly afterward spent a year of study and travel in Europe, remaining at Heidelberg for some months. Returning to the United States he studied law and was admitted to the Massachusetts Bar in 1877. His activities within the legal profession were devoted mainly to probate work and the settlement of estates. He was executor of the will of Mrs. H. Adelaide Hovey, who, together with her husband, left a large fund for endowment of two charitable trusts: the J. W. Parmenter Rest Home, Inc., for women and the Hamblin L. Hovey Institute, Inc., for men. Mr. Stone was treasurer of both institutions and a member of the board of managers. He was one of the founders of the Waltham Hospital, long a trustee and recently president of that corporation; a director and for some years vice-president of the Middlesex Fire Insurance Company of Concord, Mass.; president of the Waltham Historical Society (as he was keenly interested in genealogical research and town history); director for fifteen years of the Waltham National Bank; member of the American Chemical Society for many years. Mr. Stone was a member of the Waltham, Watertown and Weston Bar Association and served at one time as its president. He was the second mayor of Waltham (1886), and from 1887 to 1907 was treasurer of the Waltham Savings Bank.

In his youth Mr. Stone made water colors and sketches which his family prizes. Two sons survive: Walter Maxwell of Washington, D.C., who is an engineer with the P.W.A., and Percival M., who has long been associated with his father in supervision of the two Hovey trusts.

1877

A letter from Francis H. Bacon, written August 31 in Turkey, has been received and is presented here, as it will interest

the readers of our class column: ". . . I forgive you for printing my Athens diary in *The Review*, for I have had several very appreciative letters about it from friends. As I have no extra copy of the diary, I have asked my cousin living in Seattle to send you those last parts to do with as you like. . . . Good old Plimp! Everybody has to say good-bye sometime. George Mann I knew at Tech; his table was next to mine in the drafting room. Am glad you dug up his lifework. . . . Radio says trouble everywhere; all Europe mobilized; trains stopped; frontiers closed. But I don't believe there will be any war. The American ambassador writes us to leave the country for the United States and to get a gas mask! . . . I shan't get a gas mask, but we may have to leave here. Our property has been expropriated, and I may again be a refugee as I was in 1914 and 1922. My son has failed in business . . . but he has three fine boys all doing well, so he will try to work for somebody else and writes full of courage. And I, his dad, at eighty-three try to be a good philosopher. My love to all the boys who remember. . . ."

The promise of the remainder of Bacon's diary was fulfilled in the next mail from Seattle, where his cousin Cecil H. Bacon lives. We present another installment practically as received: "May 12: Another fine day. Went to museum at 9:00 expecting to take photos, but light not good. Appointment to lunch at 12:30 at Averoff with Dr. Karo and his secretary, Fräulein Wenck, grandniece of Schliemann; joined by Dr. Wedekind, the young librarian of the German School. All spoke English; very agreeable and intelligent. Dr. Karo living at Phaleron writing a book about Schliemann. Back to Plutarch for siesta. Decide to call on Dr. Lorando for general consultation: blood pressure, etc., normal; approves my diet, but says must take vitamin B. . . . To the Dionysos Theatre for post cards ordered yesterday. Nice letter from Mrs. Hill from Constantinople. She had met Theron and Cornelia who had the first 'Chronicle,' which was read to them; so now they know what I am doing in Greece. They had bought their return tickets to Piræus on an Italian boat leaving June 3, arriving here June 4. It looks now as though I might still be here then; can't tell yet. I am just getting into the swing of working at the Agora Museum and I may get to Corinth so I could work in the museum there, but I can no longer climb in and out of trenches. I can see there isn't much left for me to do in the National Museum. Haven't been in the Epigraphical yet.

"May 13: Appointment with Dr. Lorando . . . himself a refugee in 1922 — he had been looking after Rosalind's little summer place beyond Phaleron, which they want to sell. The present tenant has planted the garden and cares for the property, but there are no buyers. Lorando gives me a card to the keeper, and I'll go there someday and take some photos for Rosalind. Going up to the Agora Museum by Phaleron Street; stop at Kerameikos and take a look at Street

of Tombs. Spot a fine marble carved base, part of some building. The little Doric column I measured in 1904 is near the gate; must take a photo. At the Agora Museum finish measures and photo of my fine painted Ionic capital. Upper diameter about 67; must have belonged to the interior order of some stoa. At 12:15 Homer Thompson and the usual staff of Agora workers come for lunch. Lucy Talcott, Parsons, Howland, Schweigert, Travlos, and others at table. I leave them Lucy Shoe's last letter telling of her work at Mount Holyoke. Thompson shows me the interesting terra-cotta tiles from the Tholos. Taxi back to Plutarchos. At 4:00 P.M. to Dr. Lorando for vitamin B; must go daily for a couple of weeks. Doctor says my legs will soon be better. Letters from Alice, Lucy, Kate, Mary Kelton." (*To be continued.*) — BELVIN T. WILLISTON, *Secretary*, 3 Monmouth Street, Somerville, Mass.

1881

Classmates of John H. Allen will be interested in, though saddened by, the following excerpt from *Mining and Metallurgy*, October: "John H. Allen, retired consulting metallurgist, died on June 5. Since 1901 he had been metallurgist and a member of the firm of Knox & Allen, his work being in the United States, England, Spain, Russia, and Mexico. Mr. Allen was born in Walpole, Mass., in 1860 and graduated from M.I.T. in 1881. For the following five years he worked as chemist and assayer for the Pueblo Smelting & Refining Co. and the Santa Rita Copper Co. During the next ten years he filled responsible positions with various companies, in 1897 becoming manager of the Mountain Copper Co., Elizabeth, N.J., and in 1899 went to Rio Tinto, Spain, as consulting metallurgist for the Rio Tinto Co." — FRANK E. CAME, *Secretary*, Chambly Canton, Quebec, Canada.

1885

In connection with Hugh MacRae's interest in the development of intensive farming in North Carolina we quote the following: "The Alvin corporation, recently chartered in North Carolina and headed by Dr. Alvin Johnson, director of the new School of Social Research of New York, plans to locate a number of refugee families on small farms in southeastern North Carolina where they will be taught intensive farming. He is working in connection with the Refugee corporation of New York and he and his associates have secured the services of Dr. J. S. Joffe, chemist in the soil research division of the New Jersey state agriculture experiment station to aid the farmers in following the latest and best practices in intensive farming. . . . The settlement of refugee farming families in this section is something new for southeastern North Carolina but the settling of farming families on small farms where they are taught intensive farming has been carried on in this section very successfully by Hugh MacRae both at Castle Hayne and at St. Helena. Though a number of farmers there now own large farms, they be-

1885 Continued

gan on small farms, using the most intensive farming methods known and have developed, in the whole, into a well-to-do, industrious, thrifty colony of people." — ARTHUR K. HUNT, *Secretary*, 145 Longwood Avenue, Brookline, Mass.

1887

William H. Brainerd writes the Secretary that on September 30, Elizabeth, eldest child of Elinor Shepard and Henry Boies Brainerd, was married to Erich Lindemann. Elizabeth was graduated from Wellesley College in 1935. The bridegroom is a graduate of the University of Giessen, Hesse, and is an American citizen, a specialist in psychiatry, which he taught for some six years at the University of Iowa. He is at present teaching in Harvard Medical School and also has a clinic at the Massachusetts General Hospital. They will reside at Holden Green, Cambridge. Brainerd continued, writing in the third person: "Now as to the three Brainerds, members of '87: The first Brainerd in this country (sometimes spelled Brainard or even Braynard and, in England, apparently Brentwood) was Daniel, who came to Hartford, Conn., as a boy, bound out by his widowed mother in Middlesex, England, to a family named Willys. When he became of age, about 1662, he joined the company of proprietors who were settling Haddam, farther south on the river. Here he became a justice of the peace and a deacon of the church, likewise the largest landholder in the town. His wife was Hannah Spencer of Lynn. They raised a family of eight children. The family thrive and multiplied in the town; so that in 1830, although at least two towns had been 'set off' from the original Haddam and many people had migrated, there remained 130 Brainerds—ards, on the voting list.

"When '87 entered, two of the freshmen were Thomas Dwight and Henry Boies Brainerd. They registered from Montreal but had been born in the United States and were descendants in the eighth generation from the original Daniel through his third child, James. Their father had been a surgeon in the Union Army, who later had gone to Canada to make explosives, taking up the line of work of his wife's family, the Lafflins, who had been powder makers for several generations. The two boys continued in the family's business until shortly before the World War, when it was consolidated with the du Ponts'. Our classmates then retired from active business, and H. B., acting on the advice of his family physician, came to Dover, Mass., where he has built 'Uplands' for the family residence. He has spent his time developing his powers in painting in oils, etching, and modeling, and in the landscaping of 'Uplands.' He has three children: Elizabeth, Wellesley '35; Robert, Harvard '38; and John, Harvard '40. Difficulties in carrying on conversations with more than one person at a time have kept H. B. from many class functions, but he is always glad to have his classmates call at his home. T. D. Brainerd has never married and has remained in Montreal.

"The third Brainerd is William Hungerford, a descendant in the seventh generation from the original Daniel through his fifth child, James, and eighth child, Hezekiah. He was born in Massachusetts, the son of Timothy G. Brainerd, Yale 1830, a Congregational minister, and Lucinda R. Dewey, a teacher of higher mathematics, Latin, and botany in several ladies' seminaries in New England. He was graduated from Grinnell College in 1883 and entered Tech in the fall of 1885 as a member of the regular Course in Architecture. Family affairs called him out of school just before midyears; so that he was a member of the Class for only one semester. But following the doctrine of 'once a Tech man, always a Tech man,' the Class has included him in all its doings. He has been a practicing architect in Boston since 1900. It was he who made the trip to the West Coast, the account of which appeared in last year's class notes."

A letter just received from Herb Wilcox was very welcome and also very interesting, as all his communications are. He wrote that he had motored to Santa Monica on the day previous to writing to see our old classmate Mon Sturges. Although the latter was resting at the time of Herb's visit and could not be seen, he nevertheless was reported improving, which is certainly very gratifying. Certain recent press references to a "Herbert Wilcox" who appears to be the director of a new film led your Secretary to wonder whether our esteemed classmate (or possibly his son) might have branched into new fields of activity and fame. To dispel the possible illusion our classmate writes: "I have heard of Herbert Wilcox, the movie director, but never saw him. I think he is an Englishman. My son graduated from California Tech in mechanical engineering. He was an aviator in the World War and was credited with having brought down three German planes. He went to work for the Los Angeles Gas and Electric Company (later absorbed by the Southern California Gas Company) shortly after the war and has held the position of chief steam engineer for the last fifteen years or so. You cannot ring in either of us for your column.

"War conditions put all thoughts of any ocean trip out of our minds. We are still talking of a trip East or to Mexico City. It is getting late in the year for a visit to New England; so that will probably go over to next year. We visited the San Francisco Fair recently. Stopped at the Yosemite on our way back, intending to continue by way of Tioga Pass, which reaches an altitude of over ten thousand feet. It snowed up there for twenty-four hours just before our proposed time of crossing; three feet of snow were reported on the pass, and the road closed. I have had too much experience in bucking snow in Colorado to have wanted to tackle it, even if the rangers would have permitted it. I remember once, many years ago, leading (not riding) a horse over a pass above timber line in September. The snow was soft and so deep the horse could not touch bottom but managed to flounder through. He was an experienced snow horse, but

even at that the experience was rather exciting. Still I would rather take a horse across such a place than take an auto. When and if I get into anything really interesting and exciting, I will send you details." Sorry not to have heard from at least a few more of our scribes, but we hope for more extended remarks in our next letter. A letter just received from Dick Schmidt of Chicago says: "Remember me to any of the boys you may see and tell them I hope they are planning to be present in 1942." — NATHANIEL T. VERY, *Secretary*, 15 Dearborn Street, Salem, Mass.

1888

Tower Topics, a publication of the University of Chicago, in a number early in the summer, had the following in regard to our classmate Marion Talbot: "A woman should not attend college because it will destroy her grace and charm, ruin her health, and fatigue her brain, was America's attitude before the turn of the century when Miss Marion Talbot (Professor Emeritus of Household Administration and Dean of Women) received her A.B. and M.A. from Boston University and an S.B. from M.I.T. It was this attitude that Miss Talbot determined to change in the American educational system when she set out to organize the American Association of University Women. Some eleven years ago the A.A.U.W. announced a plan to raise one million dollars for fellowships for women. The Illinois branch accepted \$40,000 as its quota and decided to honor the founder by calling it the Marion Talbot Fund. At the annual national convention in Denver . . . they were happy to announce that the \$40,000 had been raised. Miss Talbot's is the only portrait of a woman which hangs in the Hutchinson Commons dining hall. Miss Talbot, who retired in 1925, still resides in her third floor apartment on Kimbark Avenue. She will be 81 on July 31."

Mechanical Engineering for September contains an article prepared by the American history committee for the 1938 International Management Congress. The chairman of this committee is our own Sanford E. Thompson. The subject — "History of Scientific Management in America" — is covered in Thompson's usual thorough manner. — Nate Bowditch of Framingham holds the record for the largest tuna captured off Yarmouth, Nova Scotia, this season. It weighed 769 pounds. Three hours and twenty minutes elapsed before the fish, measuring 8 feet and 11 inches in length, was under control. During that time the 40-foot launch was pulled a distance of eight miles. Now let us hear from other '88 fishermen.

John Faxon of Fitchburg spent a few days in July on Chebeague Island with his charming daughter and your Secretary. — Luther Bridges' sister, Smith College '92, tells him that her classmate Mrs. Jordan, wife of our Edwin O. Jordan, who died in 1936, has just given Smith \$5,000 as a scholarship fund. — President Webster won the silver medals for orchids at the June flower show of the Massachusetts Horticultural Society, of

1888 Continued

which he is president. — On September 8, Fred Nichols removed from Oak Park to 6200 Kenwood Avenue, Chicago, Ill. — BERTRAND R. T. COLLINS, *Secretary*, 16 Chauncy St., Cambridge, Mass.

1889

Our fiftieth birthday, or golden wedding if you prefer to call it that, has come and gone. June was the time — the fourth day of the same, to be precise — when the twenty-five gallant gaffers named below assembled on Rogers' steps (new style), whence they made their way by automobiles to the Hotel Marblehead. The Secretary had promised a sea breeze, and it got there first, 100 per cent, with the result that after lunch the blue waters of the bay danced in vain while we dragged piazza chairs out to a point in the sun behind the hotel, halfway between the service entrance and a Dutch Colonial two-decker where the view was absent but the climate was fine. Here, as we ranged ourselves in two rows, sage opinions passed up and down the line. Now, five months later — and what months — it is interesting to recall this conversation. Doings in Washington, now forgotten, loomed large. The consensus of opinion was that there would not be a war, this year anyway.

That evening we had a dinner of sorts and pleasant speaking. Zenas talked in his usual salty vein; Jap Whiting contributed a charming poem; Parker Fiske, a streamline version of Tige; Harry Howard spoke interestingly about European matters; and everybody had a story. A cablegram came from Bosworth. And so to bed. Sunday morning it rained, and nobody got up very early. The Boston papers had strikingly handsome pictures of selected groups of members. By and by the crowd pushed off for Annisquam, where our President, Hollis French, with Mrs. French and other members of his family, welcomed us at his beautiful summer home overlooking Ipswich Bay, and to a delicious lunch. Meantime the weather was clearing up. Everybody felt fine, and we had our pictures taken again. Nobody wanted to leave, but gradually the Class drifted back to town, and the fiftieth reunion was over. Nothing marred the occasion; nobody got lost; and everybody seemed happy and presumably is looking forward to the fifty-first.

Those who attended were Bliss, Bridges, Cutter, Durfee, Fiske, E. V. French, Hollis French, Gannett, Gleason, Hobbs, Howard, L. E. Johnson, Kilham, Kinsman, Lewis, Orrok, Pearson, Power, Ranno, W. L. Smith, Smythe, Stone, Wales, Whiting, Williston. Maybe we will get out a pamphlet with pictures and poetry and all that, if anybody wants it. If you do, write to the Secretary.

Clarence Norris has been ill at his home, 10 Mount Pleasant Street, Hyde Park, for some time. High blood pressure is the trouble. He much regretted his not being able to join the Class at the reunion. Billy Mott had his plans all made to come but had to have first one operation and then another one just at the scheduled time of our get-together.

Everybody will be glad to know that he came through both successfully. — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston, Mass.

1891

Melville C. Wilkinson died on July 15 leaving his widow, who for the present is living in the old home at 2315½ Second Avenue, Los Angeles. Our classmate was born in the state of New York. His father, an officer in the United States Army, spent considerable time in the Northwest. Wilkinson was married in 1910. His wife was the daughter of an army officer also, and her life up to the time of her marriage was spent in various army posts throughout the country.

Wilkinson's position on the engineering staff which constructed the breakwater at San Pedro (Los Angeles Harbor), Calif., was one of importance. Later on he went in for ranching, spending three years in such work, but in 1919 he accepted a position in the engineering department of the Southern California Edison Company of Los Angeles, where he remained until he retired from active business ten years ago. He was always interested in airplanes, and he had patented a device pertaining to their control. Of our classmates in southern California, Wilkinson knew the late George Hooper best of all.

Bert Kimball writes: "Your letter of August 8 concerning the late M. C. Wilkinson, one of our '91 men, was duly received. I am glad to have been able to collect a few facts about him from his widow. Upon writing her, she answered very kindly by calling here while out driving with some friends. I wonder if Will Wilder recalls Wilkinson; they must have been in the same section our first year. I do not remember him, and wish I had here my class photographs which are still in our attic in Waban."

"My wife's mother has been very well for the last four months; so well, in fact, that she took advantage of a special opportunity to take a trip East to attend her Mount Holyoke College reunion in June and to make a fine visit with our daughter. My sister Evelyn suffered a severe blow in July by the sudden death of her daughter, who leaves her husband and three little girls. My younger sister and her husband made us a visit in July, much to my delight. I was in Santa Barbara last month and sorry to find that Charlie Garrison was away."

We recently received information of the death, on June 6, 1937, of our classmate Arthur Dillon, whose business address was 149 Broadway, New York City. He took the Architecture Course at Tech and apparently continued in this line of work. According to our records he was unmarried.

A class dinner was held at The Country Club of Brookline, Mass., on June 14. The following were present (sixteen in all): Bradlee, Blanchard, Fuller, Bowen, F. C. Holmes, Brown, Young, Dana, Fiske, Howard, Ryder, Forbes, Rooney, Punchard, Barnes, and Damon. Messages were received from many, including Dart,

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Birks, Walker, Chickering, George Campbell, F. C. Moore, Roots, Lawrence, Jere Campbell, Spooner, Atkinson, Tappan, Snyder, Earl, Ensworth, H. I. Cole, Bunker, and others. Tom Keene was away that week. John Putnam was at Dennis on the Cape. Walter Hopton makes a trip to "Aiken Manor" each year but could not make his time fit with our dinner. Jim Swan had been laid up for several weeks, necessitating a visit to the hospital, but he is out again now. It was nice to have Fred Blanchard out again, but he had lost weight after a long hospital siege. Francis Holmes's wife was at a hospital in Boston, but he came to the dinner and said she was improving. Our youthful-looking Channing Brown was on hand as usual. Rooney holds our record for grandchildren and is still going strong — he has thirteen at present. Frank Howard is not far behind. Our host, President Bradlee, aided and abetted by Harry Young, gave us a grand dinner with all the fixings. Your Secretary had everyone (?) mystified with a half-dollar trick in which you borrow a highball and a half dollar and make them both disappear — an intriguing trick at least.

Gorham Dana got out his movie projector and showed us some of the pictures taken at previous outings. He took some colored movies of the gang before we had dinner, and we will see what we look like *au naturel* sometime. Bradlee and Fiske played a few holes of golf (nine plus) but naturally kept no score so that there could be no dispute. Fiske stated that he did not get over six on any hole and didn't lose a ball; therefore he thought that he deserved two prizes at least. Blanchard is temporarily *hors de combat* as far as golf is concerned, but challenged us to a game next year. That is too far off to worry about. The following attended the Alumni Dinner at the Statler on June 5: Howard, Roots, Hersam, Damon, Bowen, and Young. Hersam, who was in the East visiting some member of his family, retired last year from his work at the University of California.

Walter and Mrs. Hopton, your Secretary and Mrs. Fiske, and Gorham Dana had dinner with Mrs. Aiken at "Aiken Manor" on June 25. The Hoptons were on their annual visit to "Aiken Manor," and the Fiskes drove up for a few days' stay at one of Dorothy Aiken Johnson's log cabins de luxe on Webster Lake. After the dinner we all called on Walter Douglass at his lovely home near by, and then had tea at the Danas' with Mrs. Dana and their daughter-in-law and grandson. The Douglass home is very attractive, and Walter is a most genial host. Dana is banding birds under government regulations and then checking up where they go. He also has some pet hummingbirds. How we all miss Charlie Aiken, and those of us, forty in all, who attended our outing in 1935 at "Aiken Manor" will never forget that high spot in our class history, with Charlie, our host, making us all happy and at home in the old family mansion and near-by cottages. This last year three attractive

1891 Continued

houses have been built on Aiken Point on land sold by Mrs. Aiken, but it does not in the least interfere with their view of Webster Lake.

At the annual meeting of Proctor Academy, held at the school in Andover, N.H., on September 16, Gorham Dana was re-elected president of the trustees. Channing Brown and Mrs. Brown, members of the corporation, were among those present. The school is prospering under Headmaster J. Halsey Gulick and is devoting a good deal of attention to practical boatbuilding. Last spring the boys wanted to stage a regatta with other New England academies and asked Technology to sponsor it. The Institute could not do so, but lent the equipment and boathouse. So Proctor sponsored the largest meet of its kind in New England, held on the Charles River last May with thirty-eight entries. The prize was a boat built by the Proctor boys. — (*Adv.* — Dana reports sprinklers installed by Grinnell Company in dormitory basement. Your Secretary would not know about that?)

Charlie Ricker shows his continued interest by keeping us posted as to his whereabouts. He sent us postals from Glacier Park and Yellowstone in August. Last May he wrote from Havana, and we will write to him there and see if he has returned.

Barney had a number of callers last summer, including Mrs. Palmer and niece, Mrs. George Holmes and daughter, and Howard Forbes and your Secretary, who drove out to see him and found him sunning himself on the lawn. Mrs. Capen has been living in Framingham and sees Barney frequently. She goes to West Virginia for the winter. Barney gets an auto ride once in a while and is taken to church quite regularly. Barney has heard from Charlie Garrison who still takes extensive auto trips, but we have no recent reports. Probably we owe Charlie a letter, so we will try to get in touch with him before the next notes are due.

The following changes in address have been received: William H. Adams, 369 South College Avenue, Newark, Del.; Professor Arthur C. Smith, 2116 Knapp Street, St. Paul, Minn.; Alexander W. Moseley, 1709 Chicago Avenue, Evanston, Ill.; William F. Keene, Wychwood Apartments, Great Neck, Long Island, N.Y.; Thaddeus S. Welch, 1 West 64th Street, New York City; Horace L. Brand, 25 West Illinois Street, Chicago, Ill.; George W. Bryden, Lakeside Hotel, 839 North Dearborn Street, Chicago, Ill.; and Francisco Pinto, Borda do Mato 86, Rio de Janeiro, Brazil. — HENRY A. FISKE, *Secretary*, Grinnell Company, Inc., 260 West Exchange Street, Providence, R.I. BARNARD CAPEN, *Assistant Secretary*, Early Convalescent Home, Cohasset, Mass.

1893

George A. Caldwell, who entered the service of the American Telephone and Telegraph Company in New York City in 1895, retired from that organization in 1932. His present address is 1458 Beacon

Street, Waban, Mass. When last heard from, which was in September, he reported: "I am in excellent health."

"Scout Commissioner Theodore T. Dorman became Scout commissioner emeritus on Sunday afternoon, one of very few members of Boy Scout councils in the country to receive such an honor. The designation was voted at a recent meeting of the executive board, and his appointment was confirmed at a ceremony in his home, 290 Upper Mountain Avenue, with the presentation of a testimonial booklet." This from an article in the *Montclair, N.J., Times* of October 10. The quotation continued: "An important figure in Montclair Scouting for the past twenty-seven years, Mr. Dorman became Scoutmaster of Troop 13, quartered at Union Congregational Church in 1912. He remained in that post until 1929, when he became a member of the troop committee, on which he served for three years. Meanwhile, in 1917 he became a trustee of the Montclair Boy Scout Association at the time of its incorporation, and is still a member of the board."

"In 1929 Mr. Dorman served as a Scout leader at the World Jamboree in Birkenhead, England. In that same year he was elected to the executive board of the council, and in 1931 he was appointed Scout commissioner. He also served as a Scoutmaster at the National Jamboree in Washington two years ago. He was awarded the Silver Beaver, honorary decoration of the council, in 1931." After his graduation from the Course in Chemical Engineering and a year in insurance work, Dorman was an assistant examiner in the United States Patent Office, Washington, D.C., from 1894 to 1899. During this period he studied law at Columbia University, was admitted to the bar, and later practiced for a time as a patent lawyer. In 1902 he joined his father in the textile firm of Amory, Brown and Company. He retired from active business several years ago. For some forty years he has made his home in Montclair where civic affairs, as well as Scouting, have claimed much of his time.

John Fred Hinckley, chemical engineer and a specialist in soap manufacture, died on July 29 after a long illness, at his home 9115 215th Street, Queens Village, Long Island, N.Y. He was born at Marlboro, Mass., October 13, 1868, and was one of four (Orton Albee, Fred Fay, and Josiah Wilder Howe being the others) from that city who entered the Institute with our Class. After graduating from the Course in Chemical Engineering, he served for nine months as overseer of the aniline-black department of the Silver Spring Bleaching and Dyeing Company of Providence, R.I. The next four years he was overseer of the glycerin plant and chemist for the soap works of Christopher Lipps Company of Baltimore. From 1898 to 1903 he was chemist for B. T. Babbitt, soap manufacturer of New York City, where his work included the building of a plant for the bleaching of oils. From 1904 to 1915 he was with Jones Brothers (Grand Union Tea Company) of Brooklyn as chemist, his work being principally

on soaps, glycerin, and the chemistry of foods. In 1915 he joined the Mennen Company at Newark, N.J., for whom, as chemist, he originated and manufactured that company's well-known shaving cream. Later on, in 1924, he became chemist for the Lightfoot Schultz Company, soap manufacturers of Hoboken, with whom he continued until his retirement in 1933. He had been in ill-health for several years prior to his death, and during the last year was closely confined to his room.

Hinckley was a Mason and a former member of the American Chemical Society, the Chemists' Club of New York, and the Brooklyn Engineers Club. He was twice married, first in 1897 to Miss Florence De Lacour Dietz of Baltimore who died some years later, and again in 1907 to Mrs. Emilie Louise Lodge. He is survived by his widow; by his son, Alfred Dexter Hinckley, assistant to the dean of the engineering department at Columbia University; and by one grandson, Alden Dexter Hinckley.

Alexander Holmes of Kingston, Mass., a graduate of Harvard College in 1889 and later a special student of architecture with our Class, who died at Kingston on June 2, was perhaps better known in Massachusetts political circles than in Tech Alumni circles. He was a prominent Republican and long was active in public life. He served two terms in the House of Representatives and was instrumental in drafting the state's direct-primary law. He served for many years as associate commissioner of corporation and taxation and was formerly head of the income tax division. When the tax-appeals board was created in 1930, he was appointed by the governor to be one of the original members and for some years was chairman. A native of Kingston he had served his home town as chairman of the board of selectmen, member of the school committee, and assessor, and was a former chairman of the Republican town committee.

William Francis Hunt, long identified with Boston's metropolitan park system in charge of the Middlesex Fells Reservation, died on April 30 at his home in Stoneham, Mass. After leaving the Institute and until 1897, he was assistant to A. H. French of French and Bryant, Brookline, during which time he was engaged on topographical surveys of the Fresh Pond and Middlesex Fells reservations of the metropolitan parks which at that time were being acquired by the state. He was next employed on the Melrose sewer system and in 1900 was made first assistant engineer of the Melrose Public Works Department in charge of the engineering division. Later, as engineer for French and Bryant and afterward for Guy Lowell '94, he was engaged for a few years in landscape architectural work. In 1909 he took charge of sewer construction at Norwood, Mass. In 1913 he entered the metropolitan park service in the Middlesex Fells division where he remained for nineteen years, when ill-health forced him to resign somewhat in advance of the age limit for retirement.

1893 Continued

In his home town of Stoneham, Hunt was long active in town affairs, serving for many years on the board of appeal and the planning board and as consultant on sewer extension work. In 1896 he married Miss Lilian Imogene Skinner who, with two sons, survives him.

George Moore, who was with the Class during its freshman year and returned in 1893 to study mining engineering for two years, died on July 31. For a number of years he had resided at Hastings-on-Hudson, N.Y. On leaving Tech he was engaged for a time in mining work in Kansas and Utah, during which period he invented the cyanide-filtration method known as the Moore process which was adopted in this country, Australia, Mexico, Canada, and Japan. In 1904 he bought control of the Consolidated Light, Power and Ice Company of Joplin, Mo. Filtration in metallurgy led him to become interested in water filtration. He sold his Joplin company in 1908 when he became president of the Pure Water Service Corporation.

Walter Woodbury Patch of Los Angeles died on August 9. He was born at Lexington, Mass., January 19, 1872. After completing the Civil Engineering Course at Tech, he was with the metropolitan water board of Massachusetts for about ten years, engaged in a variety of work for Boston's additional water supply, during the last two years being principal office assistant of the Weston aqueduct department. After a year with the engineering department of the aqueduct commission of New York, he entered the United States Reclamation Service in 1905 as construction engineer in charge of irrigation work. Thereafter his activities were in the West and on the Pacific Coast. While in the Reclamation Service he designed and constructed the storage project at Belle Fourche, S.D., including a large earthen dam 6,500 feet long and 115 feet maximum height. He also designed and constructed aqueducts, filter beds, canals, siphons, tunnels, and miscellaneous irrigation works. In 1908 he was engaged in irrigation work at Orland, Calif., and in 1909 was transferred to the Klamath project in Oregon. After nine years with the United States Reclamation Service, Patch was for one year in private practice in San Francisco. He then entered the employ of the California Highway Commission as division engineer of Division VII in southern California with headquarters at Los Angeles. During his nine years' service in this position, he designed and constructed several hundred miles of hard-surfaced pavement and several important bridges, work costing more than \$12,000,000. He resigned in 1924 to take up real estate work and private engineering practice at Santa Monica. In 1930 he joined the staff of the Los Angeles County Flood Control Commission; he was on sick leave from that organization when he died. Patch was a member of the American Society of Civil Engineers, the American Association of Engineers, and the Los Angeles City Club. He married Miss Alice W. Walker of Marlboro, Mass., and they had three daughters.

Offering a representative review of his work as artist, Cadwallader Washburn gave to the New York Public Library a considerable number of prints, occasioning a one-man exhibition last spring. The library's *Bulletin* (April issue) contains an extended account of his lifework, from which the following excerpts are taken: "Washburn, after studying architecture at the Massachusetts Institute of Technology, and painting under W. M. Chase, Sorolla and Besnard, took up etching, to which he has mainly devoted himself since, working mostly in drypoint. His first exhibition was held in New York in 1910, and since then he has had a number of exhibitions in this country and in Europe.

"He went to Venice in 1903, and did some plates of Venetian buildings and places, definite in statement rather than suggestive, and with a leaning toward accepted methods in execution. That phase of his career was of short duration. The next year found him in Japan, on the first of his many journeys made to satisfy his artistic Wanderlust. . . . After the visit to Japan his wanderings took him to many places, with resultant series of plates in each: Maine, Mexico, New Jersey, Arizona and California, The Pan-American Exhibition, Siam, Mexico again (where he now was attracted by bull-fights, which he recorded in a shorthand somewhat akin to the method of Willi Geiger), Marquesas Islands, California once more, Monte Carlo, French Riviera, Tunisia, Paris, Florida, Barbados, Mallorca, Gloucester, Canary Islands. Fairly clear stages of development appear in the work done under the influence of each of these several regions and localities.

"In Maine he did his 'Norlands Series' in 1907-10, picturing meadows, woods and streams with a feeling of loving intimacy with the scene. . . . Endowed with a keen sense of the picturesque, of the choice of compositional effect, he is apt to apply that happy faculty to representation of the often elusive charm of the every-day scene, even of nature in aspects that the majority would pass by as hum-drum. The scene of 'The Road' might not hold many, but he sets it down with discerning interest. . . . Washburn in his earliest work was definitely linear, but he soon began to change toward expression in tone, seeing with the eye of the painter as well as of the draughtsman. It became with him a matter of tonal effect, mass rendering, suggestion of color values. This appears notably in a number of heads done in recent years, interesting examples of portraiture. Only, these are not portraits of noted people, but proofs of his sympathetic interest in the plain folk whom he encountered on his travels. . . . Washburn brings out features and modeling by almost caressing strokes of the needle, in lines that are not lost in a conventional sauce of parallelism, but yet fuse into tones and texture and form.

"If Washburn said to the present writer, not long ago, that the Norlands Series was 'always experimental, therefore

unsatisfactory,' the first two words of that statement can after all be applied to much of the work of one who is always in quest of the true way, and who has always been his own severest critic. His nature is essentially a searching one, experimenting naturally. Wherever he is, this tireless recorder of impressions of landscapes, architecture, people, is busy setting down those impressions in his own way, without compromise between his conceptions, ideals and principles and any accepted manners in art or preferences of the public. . . . Why not sum up in the words of Malcolm Salaman: 'A remarkable personality, compact of natural independence, diffidence, sincerity, tenacity of ideals, and a sort of cosmic curiosity.'"

The following changes in mailing address have been received: Professor Stephen A. Breed, 130 Brattle Street, Cambridge, Mass.; Professor Arthur G. Farwell, Care of *Musical America*, 113 West 57th Street, New York, N.Y.; Charles F. Fitz, Jr., 18 Common Street, Watertown, Mass. — FREDERIC H. FAY, *Secretary*, 11 Beacon Street, Boston, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 551 Tremont Street, Boston, Mass.

1895

We learned through the New York *Times* of the death of Alfred Dejonge, II, on September 14 in New York City. He died at the Post-Graduate Hospital of injuries received on September 2 in a traffic accident. Born in 1872 in Stapleton, Staten Island, he was the son of Louis Dejonge, founder of the firm of Louis Dejonge and Company, 155 Sixth Avenue, New York City, makers of coated papers. As far as we know, Dejonge was unmarried.

Following graduation Dejonge spent one year with the Holyoke Machine Company at Holyoke, Mass., in the shop and drawing room. His next adventure was a year's trip to Saxony, Germany, to get acquainted with the manufacture of coated papers. In January, 1898, he entered the employ of Louis Dejonge and Company at their factory at Tompkinsville, Staten Island, and finally became secretary, retaining this connection until his retirement a few years ago.

We sorrowfully record the death of Mrs. John H. Gardiner, wife of our genial Assistant Secretary, in New York City on August 2. Mrs. Gardiner attended the festivities of our New York Fair reunion last June and enjoyed all of them. Following the reunion she underwent a major operation from which she did not recover. Those who attended the New York and Oyster Harbors reunions, as well as the class friends living in and about New York City, deeply regret her passing. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass. JOHN H. GARDINER, *Assistant Secretary*, Graybar Electric Company, 420 Lexington Avenue, New York, N.Y.

1896

Two classmates have sent communications to the Secretary during the past month, but they were mighty secretive

1896 Continued

about themselves, so that there is practically nothing which the Secretary can report regarding them. The culprits may look upon this as a public denunciation supplementing the personal denunciation which the Secretary sent to each of them by mail. Charlie Hyde's letter was postmarked in California and was apparently written in Berkeley, a fact which would lead one to infer that he had journeyed safely back to his own fireside after having looked in upon us on Alumni Day in June. He did say that he was a busy man, but he did not indicate the nature of his "business." Gaylord C. Hall wrote from New York, using the letterhead of the Interborough Rapid Transit Company, which use would lead to the conclusion that he was still in the employ of that company and was helping to furnish the power for transporting thousands of New Yorkers daily. He wanted to know something about wind tunnels and the friction of air in such tunnels. Maybe he has in the back of his head some scheme for reducing the draw-bar pull of his subway trains by greasing the subway walls.

Sam Smetters has broken out in print, having presented a paper on "Shrinkage of Steel to Correct Distortion from Welding and Forging" at the meeting of the American Welding Society in connection with the National Metals Congress in Chicago on October 27. In the *Boston News Bureau* of September 21 was an excellent face of Paul Litchfield showing him wearing a smile and appearing still in the bloom of youth with a good head of hair. This picture bore the caption: "Paul W. Litchfield, Boston-born of Mayflower stock, President and Chairman of Goodyear Tire & Rubber Co., M.I.T. trained, has spent 43 years in the rubber business, 39 with Goodyear. Active in Boy Scout work and currently a member of Business Advisory Group, Dept. of Commerce."

Billy Anderson's presence in Boston was noted in the last issue. Before he got away to hibernate in Cincinnati, he was host to Rockwell, Damon, and Locke at a very enjoyable dinner at the Hofbrau in Boston. In spite of the attractions of music and a floor show, there was opportunity to consider local affairs and world affairs, and when the session broke up rather late, we all really felt that we had accomplished something toward settling affairs of the world.

Henry Sears sent a clipping from a Providence paper reporting that Stephen Gage died from a heart attack on October 2. Incidentally, Henry was another who failed to say anything about himself and, furthermore, was not present at a meeting of the Providence Club on October 19, which the Secretary attended in his official capacity as alumni secretary. Maybe Henry had to prepare his lessons for the next day.

Stephen DeMeritte Gage was a graduate of Course V. As a student he was on the Institute Committee and was a member of the K₂S Society and of the Photographic Society. He was born January 4, 1874, in Durham, N.H., the son of Edwin V. and Martha J. DeMeritte Gage. On December 22, 1896, in Bradford, Mass.,

he married Arabella W. Menter; their children were Martha DeMeritte, born on September 24, 1897, the Class Baby, now Mrs. R. N. Brodie; Stephen DeMeritte, born July 4, 1899; Ruth Erdene, born October 12, 1902; and John Albert, born January 4, 1906.

Gage was assistant bacteriologist for the Massachusetts Board of Health from 1896 to 1897, biologist at the Lawrence Experimental Station of the Massachusetts Board of Health from 1897 to 1914, and chemist and sanitary engineer of the Rhode Island Board of Health from 1914 on. He also served as sanitary engineer for the Rhode Island Shell Fish Commissioners beginning in 1916 and as sanitary engineer for the Rhode Island Board Purification of Waters beginning in 1921. He had been especially active in studying the effects of the discharge of metropolitan sewage upon the shores of Boston Harbor and adjacent waters. At one time he was chairman of the committee on bathing places of the United States Public Health Association. From 1920 to 1930 he was consulting sanitary engineer of the National Conference of State Sanitary Engineers and was engaged frequently in a consulting capacity on major sewage problems in different parts of the country. He directed extensive studies of the pollution of Narragansett Bay and its tributaries. During the past decade he had acted as sanitary adviser to various industrial plants in Rhode Island and had designed a system of sewage treatment to enable Jamestown to protect its bathing beaches. He acted as consultant on the treatment of waste liquids by the Apponaug Company. In 1930 and 1931 he was engaged by the city of Youngstown, Ohio, on its problem of pollution of Mill Creek and bathing beaches in Mill Creek Park, and during the same two years he made studies of the pollution of certain portions of Puget Sound in the state of Washington, with particular reference to pulp-mill waste upon shellfish. Recently, he had been retained as expert witness by the city of Chicago in a suit for infringement of patents in methods of sewage treatment.

In 1918 he was awarded the coveted Fitzgerald Medal by the Boston Society of Civil Engineers for his outstanding work. He was a member of the United States Public Health Association, the New England Water Works Association, the New England Sewage Association, the Boston Society of Civil Engineers, the Providence Engineers Society, the American Public Health Association, the American Chemical Society, the American Water Works Association, and the Conference of State Sanitary Engineers. His recreations included golf, bowling, swimming, reading, and apparently also writing because he has left behind an extensive record of publications too long to be listed here, which dealt with various aspects of sewage and sanitary work. He had followed Masonry and had taken all of the degrees up through that of Knight Templar. We all knew Gage as a student — active, able, and social — but apparently after graduation he became so engrossed in his work that he did not

continue active relations with his Class or with Technology. The Secretary heard from him at rare intervals. More frequently word reached the Secretary from some classmate who had seen Gage or who knew about him and who told all the splendid work that Gage was doing in his field. — CHARLES E. LOCKE, *Secretary*, Room 8-219, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

1897

You will all be interested to hear that our Charlie Breed, Head of the Department of Civil and Sanitary Engineering at the Institute, was recently appointed by Governor Saltonstall to study the problem of transportation as furnished by the New Haven road to the South Shore and the Cape. Charlie appears to show a hopeful attitude as regards the shares of the New Haven road in general. The other day, in testifying with Parmelee, director of the Bureau of Railway Economics, against the proposal to wipe out common shares of the New Haven road, Charlie declared the New Haven is in a particularly strategic position to benefit from the increased movement of passenger and traffic service within the nation's greatest consuming markets and contended that there is substantial value back of these securities as well as ample prospective earning power. For all those who have New Haven stock, and there are many, this will be encouraging news.

The writer received recently a communication from Walter A. Gleason of Woodinville, Wash., whom you all remember: "So far as I am aware, no other '97 man has had to get this far from home, expect one who left so long ago I am unable to recall his name." The writer does not quite get the gist of the note and hopes that when Gleason reads this he will explain more fully. At any rate, we are more than pleased to hear from friend Gleason and sincerely hope we may be able to furnish more about him in a subsequent issue.

In October the writer, accompanied by Mrs. Bradley, had a very delightful trip to Francess town, N.H., where our classmate Harry Worcester has a large farm which is very interesting and most picturesquely located. In fact, this particular region is known as the Switzerland of America. After having had a delightful lunch and inspecting the livestock and gardens, we headed for Weston, returning with some of the choice products of the farm and with a most pleasant impression of our visit. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass. CHARLES W. BRADLEE, *Acting Secretary*, 30 Kilby Street, Boston, Mass.

1900

In the next six issues some mention will be made of the forthcoming fortieth reunion of this Class next June. If any of the readers have bright thoughts or suggestions to offer, send them along to the Secretary. One week end last summer the self-appointed reunion committee of one decided to look the field over carefully

1900 Continued

and spent most of the time arguing with Charlie Brown at the East Bay Lodge about the price to charge the cash customers next June. During the stay on the Cape, the committee called on Carleton Ellis at his place in Hyannisport.

Morgan Barney, XIII, writes that his son, John Barney, entered M.I.T., Course XIII, this fall. — The military members of this Class seem to be forging ahead. According to latest reports, it is now Major Charles T. Leeds in Los Angeles and Lieutenant Colonel Milton W. Hall at Fort Clayton, Canal Zone.

George W. Emery who died last May was born on September 5, 1876, and at the time of his death was with J. S. Coffin, Jr., Company in Englewood, N.J., as a design engineer. He leaves a widow, two children, and a grandchild. Richardson, who kindly sent in the notice, writes that last January Mrs. Richardson visited the Emerys who were living in the old Morrow homestead where Anne Morrow Lindbergh was born and lived as a child. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

1901

During the first week in October your Secretary had occasion to attend in Boston a convention which was held at the Hotel Statler. Between sessions and after the evening entertainments there was ample opportunity to ramble around and become reacquainted with the part of Boston where we endeavored to accumulate various kinds of knowledge between the years of 1897 and 1901. The Hotel Statler was not existent in those days and the Park Square section of the city has been so changed as to be hardly recognizable. Even our old Rogers and Walker buildings have recently been torn down to make way for the imposing structure of a large life insurance company, and it is interesting that because of the liberal price paid for the location by that life insurance company, the new Rogers Building could be planned and built at M.I.T. It may also be recollected that many years ago the old Engineering buildings A and B, and so on, on Trinity Place were torn down to make way for the University Club which many of us have found so worth while to visit.

Up around Copley Square, however, are still many of the old landmarks, several of which, like the Boston Public Library, Trinity Church, Hotel Westminster, and especially the Hotel Brunswick, bring back interesting memories. The old Natural History Museum Building next to Rogers Building is also still standing, and we can all remember the chance which the photographer took in recording our youthful faces on the steps of that building back in 1899 or 1900. There is, however, no longer the familiar "chapel entrance" for the Hotel Brunswick; that old doorway now leads into a cocktail lounge. During pleasant weather on the sidewalk in front, now functions a sidewalk café which cleverly imitates and perhaps surpasses similar affairs of the kind in various European capitals. The Brunswick also has two entertain-

ment rooms known, respectively, as the Sun Room and the Moon Room; so that when the boys come back to Boston for the next Alumni Day they will be able to find entertainment, both night and day, near our old haunts. Mention may also be made that Frank Locke's, now better known as the Winter Place Tavern, and Marliave's and other places still flourish and, of course, if some of us can reassemble some June in Boston, we should certainly not overlook the well-remembered Boston institution known as the Pops.

It is stated that to reminisce is to indicate the approach of age. However, it does not seem to be unpleasant to recall those good old times, and the fact that some fifty members of the Class have already made response since the annual letter was sent out on September 26 would indicate that class spirit is still rampant. Some 275 letters were sent, and we hope that a considerably larger number than fifty will send responses for news for future class notes and for the preparation of the class register which we hope to release early in 1940.

Horace Hildreth, I, was the first to reply, stating that the leasing of the management of Hildreth Brothers wood-working machinery plant at Harvard, Mass., has given him time to do more engineering consulting work and that for the past two years he has been out in the Rockies about half the time, working on mechanical equipment for gold recovery. Previous to that he spent considerable time on improvements for thermostatic and heat control, but evidently while the price of gold remains at its present level Horace believes that continual progress may be made in gold-mining processes. Bill Newlin, II, Secretary of the Faculty for Amherst College, was the next to send in his data sheet but unfortunately made no comments; we will, therefore, have to secure news of his doings through other sources. Next we heard from Asher Weil, II, who, as president of the Electro-Sun Company, Inc., 4934 Grand Central Terminal, New York City, is kept busy reproducing all kinds of records, brochures, blueprints, photostats, and so on. Asher stated that he wished more 1901 men would visit the New York Tech Club at 24 East 39th Street. Ed Seaver, New England manager of the Foster-Wheeler Corporation, 80 Federal Street, Boston, wrote that he was "still alive but not kicking so much." There must be much life still remaining in that six feet two inches of attractive physique which first made public appearance on the stage at the Hollis Street Theater and did some very effective kicking at that spot during our sophomore year. Ruly Carpenter, Vice-President of E. I. du Pont de Nemours and Company, sent no news, but we were glad to know that he had not forgotten the Class. Bob Derby, Vice-President of Niles-Bement-Pond Company, 111 Broadway, N.Y., was equally reticent, but sometime your Secretary hopes to learn more about the very considerable developments of Bob's company in West Hartford and vicinity. Frank Walker, consulting engineer with

the Eastern Massachusetts Street Railway Company, 175 Blackstone Street, Boston, advises that he has fortunately recovered from the various illnesses and operations of two and three years ago and that he is finding time to do a little writing regarding experiences out West, back in the gay Ninety's. In addition to his work with the E.M.S.R., Frank also does consulting engineering work for other interests.

Brief reference was made to Nat Patch in class notes for November; Nat's data sheet carried the interesting information that he had been connected with the Lumen Bearing Company of Buffalo for thirty-nine years and that his other interests had been almost wholly with the foundry industry. Nat has been president of several foundry associations and, although he has been troubled with poor eyesight both during, and ever since, his Tech days, he has found many ways of continuing his interest and being most helpful in his chosen business. Warren Bickford, who was so active in the class doings of our undergraduate days but whom we have not heard from for many years, writes that he has decided to come out of hiding, and we believe surely expects to be present at our fortieth reunion. Back in 1909 Bickford helped to establish the Iron City Electric Company, of which he has been secretary and treasurer since that time and up to March 1 of this year, when the concern was purchased by the Westinghouse Electric Supply Company. Since then Warren has continued as district manager of that company at 575 Sixth Avenue, Pittsburgh, Pa. Bickford mentioned that, if for no other reason, he retains interest in Boston because his older daughter, who was married last January, now resides on Mount Vernon Street on Beacon Hill. He also stated that his younger daughter, who lives in Pittsburgh, is responsible for his being the proud grandfather of two granddaughters, aged three and five years, respectively. Warren stated that he had met Allan Rowe in Pittsburgh shortly before the latter's death and that he occasionally heard from Phil Moore and Perk Parrock.

Another stranger to these records, Wilford W. DeBerard, XI, briefly noted that he was an associate editor of the *Engineering News-Record*, 520 North Michigan Avenue, Chicago, Ill. We should be enabled to find much other interesting news about or from him in that magazine. The receipt of a data sheet is acknowledged from Ralph Whitman, regarding whom special mention was made in the November Review. Phil Moore, Vice-President of Poor and Company, Railway Exchange Building, Chicago, was, as usual, quite reticent on his data sheet but we will anticipate interesting news when we meet at the fortieth reunion. Frank Holmes, New England representative of Andale Company, Philadelphia, and the Dayton-Dowd Company of Quincy, Ill., who makes his headquarters at 226 Salem Street, Swampscott, Mass., was equally reticent. Ralph Robinson advised that he is a manufacturing engineer in charge of

1901 Continued

the vacuum-tube department of the General Electric Company at Schenectady, N.Y. Ralph is honorary secretary for M.I.T. for the Schenectady area as well as chairman of the M.I.T. Schenectady regional scholarship committee. Those Honorary Secretaries have certainly been doing a good job, and the Institute is much indebted to them.

To last month's announcement of the death of Samuel F. Rosnosky we can add only that the date was August 9. If any member of the Class can furnish any further information of his recent experiences, it will be appreciated. — Special mention was made of Bill Sweetser in our notes for the November Review, and on October 6 your Secretary received a note from him stating that he had spent most of the time during the past summer at his cottage at Meredith, N.H., on Lake Winnepesaukee where he used much energy in removing roots and debris of the big pines wrecked by the hurricane of September, 1938. We are afraid that Bill may have overestimated his youthfulness and that the heavy labor at his cottage may have had something to do with the sad news we received later: Bill passed away on October 16. Sweetser has been a loyal attendant at most of our reunions and in his capacity as professor at the head of the engineering department for the University of Maine was much beloved and respected by the young men who have taken the engineering course at that university. Sweetser was somewhat older than most of us, having been born at Saugus, Mass., in 1874; before he came to Tech he had worked for structural concerns in the Middle West and in New England. After graduation he spent some time at the University of Vermont and from 1909 to 1915 taught at the Case School of Applied Science. Since 1915 he had been at the University of Maine and, as head of the mechanical engineering department, was a keen student of developments in the engineering world. He had only recently installed some new apparatus for working with wind velocities up to 100 miles per hour.

The Alumni Office also advises us of two changes of address: Alice D. Bowen (Mrs. Archer C.), 9 Harding Court, Melrose, Mass.; Edward B. Belcher, Strong, Maine. — ROGER W. WIGHT, Secretary, The Travelers Fire Insurance Company, 700 Main Street, Hartford, Conn. WILLARD W. DOW, C.P.A., Assistant Secretary, 20 Beacon Street, Boston, Mass.

1903

Although the year 1939 is an odd year for '03 to spring a reunion, it was really a year to be remembered by your Secretaries. Starting with hope and faith on the part of the Secretary and secret skepticism on the part of his Assistant, we sent out bids for a class dinner to take place on the Saturday before Alumni Day. And fourteen of the Class reported at the University Club, as follows: C. F. Green, Gould, Nutter, Denham, Myron Clark, Morse, Aldrich, Howard, Sears, Nolan, King, Peaslee, and the Secretaries — a

fine showing. Particularly pleasing was the presence of several who had not attended a reunion for years: Morse from Indianapolis and Jack Howard from the Institute, for instance. We hope they will all be here next year, too. There was a lot of reminiscing and getting acquainted all over again to a late hour. A grand evening!

The following Monday was Alumni Day, and many of those at the class dinner came over to Tech to the luncheon at noon. George Greene came up the drive from Lever Brothers and announced to all of us that George Melville, 2d, would enter Tech with the Class of '65!

The banquet at the Statler in the evening was great, and again we had a good turnout: King, Regestein, Clark, Denham, Morse, Swett, and the Secretaries. Mrs. King and Mrs. Morse also attended the various affairs of Alumni Day. It isn't too early to plan to come to Tech next year, probable dates being June 1 and June 3, respectively, for class dinner and Alumni Day.

For many years George Swett and Jack Howard have been the only members of the Class on the Faculty of the Institute, but this year Walter R. MacCornack has been appointed dean and head of the School of Architecture. Congratulations and best wishes from the rest of the Class. We hope we shall see him with us at the next class gathering. Since coming back to the Institute, he has received the further honor of being elected a vice-president of the American Institute of Architects. — FREDERIC A. EUSTIS, Secretary, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, Assistant Secretary, 441 Stuart Street, Boston, Mass.

1907

Having received from the Institute early in October a notice of a change of address for Lester W. Brock to 720 Washington Street, Brighton, Mass., I wrote him a letter requesting information regarding the circumstances of his moving from Akron, Ohio, to Boston. On the afternoon of Sunday, October 8, Lester called my home by telephone, and upon being assured that Mrs. Nichols and I were at home, he and his wife drove out from Brighton to Auburndale and visited with us for an hour and a half. What a delightful response to my letter this was! Of course, not many '07 men to whom I write seeking information are so situated that they can come personally to see me, but it would be fine if they would all have enough of Lester Brock's co-operative spirit at least to write me. From what I have been told by other Class Secretaries, however, I think that the '07 percentage of those who refuse ever to reply to correspondence is lower than the average.

Since 1931 Brock has been a salesman for C. P. Hall Company of Akron, manufacturers of organic chemicals for rubber compounding. His territory has been changed to New England, part of New York State, and south to Delaware. Hence his removal to Boston to live. His older daughter, Lois, is a teacher of chemistry and biology in a private school

for girls at Buffalo, N.Y.; his daughter Geraldine is in Boston; and his son, Lester, Jr., is a chemist with Boston Woven Hose and Rubber Company at Cambridge, Mass. Last time I saw Lester was in 1927, but he looks about the same as then and is as jolly and interesting a conversationalist as ever.

John Frank was elected last May one of three new trustees of Armour Institute of Technology at Chicago. — Floyd A. Naramore from Seattle, Wash., came East for the annual convention of architects in Washington and called at the Alumni Office at the Institute, leaving his regards for the Class Secretary and other '07 men. Thank you, Floyd. Wish we might have seen you. — Carl Trauerman thoughtfully sent me a copy of his paper entitled "Financing Primary Mining Ventures" which he presented at the annual Metal Mining Convention, western division, at Salt Lake City in August. — Harold Wonson automatically joined the group of '07 grandfathers when his daughter Marcia became the mother of Harriet Anne Lillard on June 15. Harriet's father, Walter H. Lillard, Jr., is son of the headmaster of Tabor Academy at Marion, Mass., and is an instructor in mathematics and director of admissions there.

We agree that this is an unusually small amount of notes for our Class. We have no alibis — also no pleadings. No doubt many of our Class are doing interesting things, and we shall hope to be able to tell you of some of them in the next Review. — BRYANT NICHOLS, Secretary, 126 Charles Street, Auburndale, Mass. HAROLD S. WONSON, Assistant Secretary, Commonwealth Shoe and Leather Company, Whitman, Mass.

1909

Paul Wiswall wrote in October: "I have received the second of the annual reports of the health department of New York City. Not only is this book a fine piece of typography and binding, but it is full of the most fascinating references; in fact, I think I will send it up to you to look over. You will note that George Palmer's name is prominently displayed on the title page." — Saturday, October 14, was an important day in two '09 families. In Leyden Church, Brookline, Mass., Doris K. Gilbert, daughter of Mr. and Mrs. Royce W. Gilbert, was married to John M. Hitchcock '34. Robert L. Weill (Brown '36), son of Mr. and Mrs. Melville K. Weill, married Miss Janet Batchelder of Providence. John Hitchcock is associated with the Dennison Manufacturing Company at Framingham, Mass., where the young couple will occupy their new home. Bob Weill is taking his bride to Atlanta, Ga., where he is with the Commercial Investment Trust Corporation.

The New York Times reports that Rudolph W. Riefkohl, lieutenant colonel in the United States Army, has been designated as constructing quartermaster of the Army's Caribbean air base to be located at Panto Borinquen, Puerto Rico. — Dodd, Mead and Company have recently

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published Alice Curtis Desmond's latest book, *Soldier of the Sun*, a story of Peru in the days of the Incas. The publishers say: "When Mrs. Desmond visited the Interior of Peru and Bolivia with her husband, she was so impressed by the dramatic country, its amazing ruins and the fascinating suggestion of the colorful lives of former Incas, that she started intensive research into the customs, legends, and history of the ancestors of the present Indians of Peru. The resulting authentic and dramatic knowledge she enthusiastically decided to share with young readers, so we have 'Soldier of the Sun.'" Your Secretary and Mrs. Main are grateful to Tom and Alice for sending a copy of this delightful book to them. —CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. *Assistant Secretaries*: PAUL M. WISWALL, MAURICE R. SCHARFF, New York; GEORGE E. WALLIS, Chicago.

1910

At a meeting of the rubber section of the American Chemical Society in Boston in the fall, the 100th anniversary of the discovery of vulcanization of rubber was celebrated. The toastmaster was John M. Bierer, X. In the opening address he reviewed briefly the history of the utilization of rubber. John is the manager of the Boston Woven Hose and Rubber Company, and he is responsible for many patents connected with rubber manufacture. —Walt Spalding stopped in the office early in October while he was in Boston on business. Walt is in the building contracting business under the name of the Spalding Construction Company in New York City. —Phil Taylor underwent a serious operation this summer and was in the hospital for several weeks. He is now back on the job and looks extremely well. —HERBERT S. CLEVERDON, *Secretary*, 46 Cornhill, Boston, Mass.

1911

Hats off to Carl Stephens Ell, XI! Announcement was made in early October that "Dr. Frank Palmer Speare, who 42 years ago had an idea, has resigned from the presidency of his creation, Northeastern University, Boston, said resignation to be effective next June, at which time he will become President-Emeritus with Dr. Carl S. Ell, vice-president and head of the day division colleges of engineering, liberal arts and business administration, as his active successor." Thus Carl will become president of the eighth largest engineering college in the United States, originally established by Dr. Speare as the Northeastern Evening Law School. Carl was graduated from De Pauw University in Indiana in 1909 and joined our Class that fall, receiving his S.B. with us two years later. Subsequently he received an S.M. degree from M.I.T. and a master of education degree from Harvard. His original alma mater, De Pauw University, honored him with a doctor of science degree a few years ago.

During the first year he was with us Carl got himself a job with Dr. Speare and together they established in the fall of 1909 a day engineering college at

Northeastern on a co-operative plan whereby, with the aid of industries, students could study for ten weeks, then work for ten weeks, putting classroom theory into practice. Under the plan half the students worked while the other half studied, and then they reversed. In his first day-division unit Carl had eight students. Today with the addition of other college units to the university, Northeastern's annual enrollment is approximately 6,500.

Carl is one of the most active college executives you can imagine. He is chairman of the national committee on instructional methods for the Society for the Promotion of Engineering Education and is a past chairman of the New England section of that society. He is a fellow in the American Association for the Advancement of Science and an associate member of the American Society of Civil Engineers. He is a member of the American Society of Mechanical Engineers, the Boston Society of Civil Engineers, the Engineering Societies of New England, the Harvard Teachers' Association, the Massachusetts Schoolmasters' Club, the New England Association of Colleges and Secondary Schools, and the Massachusetts Civic League. He is a vice-president and trustee of the New England Deaconess Hospital, a trustee of the Newtonville Methodist Church, and permanent president of the New England De Pauw Alumni Association.

"To interview Dr. Ell is to interview Northeastern," said a mid-October interviewer in the Boston *Evening Transcript*. "The university is an integral part of him and he of it. Gray-haired, but still robust and energetic, the president-elect has few hobbies or other outside interests. 'I am having so much fun at Northeastern,' he explains, 'I don't need to look for it anywhere else.' He plays a little golf to keep fit and spends spare moments with his wife and daughter at their Newtonville home. But he seldom takes a real vacation and most of his social activities are tied in with his college work. In appearance Dr. Ell somewhat resembles President Compton of M.I.T., a friend of long standing. He is cordial in manner and facile in speech when talking on such a congenial subject as Northeastern University. He did drop just one inkling as to the policy he will follow as president. Glancing proudly around the polished surfaces of his modern office, he said that Northeastern's splendid new building represented the first step toward the realization of his ambition to see the school adequately housed. It is safe to say that the building program will continue under Dr. Ell's leadership."

We who know Carl best realize what a fine, loyal Tech man he is and the whole Class is happy and proud to learn of this splendid recognition of his unusual abilities. May you have a most successful career as president of Northeastern University, Carl! — While we're in educational fields, let's go across the Charles to Cambridge where we find that Barbara Comstock, twenty-one year old daughter of Marshall E. Comstock, VI, was gradu-

ated from Radcliffe with a *magna cum laude* citation, having highest honors in the 1939 class of 161 A.B. graduates. In addition Barbara split with Stanley G. Geist, Harvard senior, a \$250 prize for the best thesis presented by an honor candidate in modern literature or English at either Harvard or Radcliffe. Three months later Marshall's younger daughter, Ruth, just turned nineteen, decided it was time for the big step, and on September 9 she and Rand Smith of New Bedford were married in the West Medford Congregational Church.

These notes are being completed in late October, just after the defeat of Norwich University by Worcester Tech in football. A couple of days before, I was talking with Hal Robinson, I, at the state convention of the Massachusetts Federation of Planning Boards, of which he was chairman, held here in Worcester, and he said he and his wife had a "problem" what with their older son a graduate of Norwich and their younger son a sophomore at W.P.I. However, the fact that their daughter was graduated from Middlebury threw the balance of power toward Vermont; so they sat on the Norwich side of the field. (Gee, what would Sara and I do if we attended a Bowdoin-Vassar debate or sumpin'.)

Although there was a threat of a high wind for the last week end in September, the wind passed out to sea and the M.I.T. Freshman Camp was held as scheduled up at the Cambridge Y camp in Dunstable, Mass., near the New Hampshire line. Again I was privileged and able to attend, making my record thirteen out of fourteen. Among the freshmen — and 347 of them were present, establishing a new high — I met and talked with two junior Eleveners — Read Stevens, son of Don, and Edwin Lord, son of Ray. Both are fine-appearing, ambitious youngsters, each particularly proud to be following his dad's collegiate footsteps. Young Stevens prepared at New York Military Academy and, like his dad, is interested in publications and plans to go out for *The Tech* staff. He is a Phi Beta Epsilon pledge, again like dad. Young Lord prepared at the Moses Brown School in Providence. Ray, you know, is secretary and assistant treasurer of the Manufacturers Mutual Fire Insurance Company in Rhode Island's capital. While at Moses Brown, Edwin was a track man, specializing in middle-distance runs, and hopes to keep this up at Tech. Among the councillors at Freshman Camp was Bruce Duffett, a Course X junior, whose dad, Norman, X, is superintendent of the Union Carbide Company at Niagara Falls. Bruce represented the Interfraternity Conference and at one of the evening council rings he gave the youngsters a fine talk on the fraternity problem. He's a Deke, as was his dad. I also was delighted to be able to attend the big Freshman Smoker at Walker Memorial, the night of registration day. Contacts such as these with the rising generation keep one young!

We have news of another junior romance, this one linking the son of an '11 man with the daughter of a '13 man. At

1911 Continued

a candlelight service in Trinity Church, Newton Center, on October 14, Miss Eleanor Ruth Fessenden, daughter of Mr. and Mrs. Howard Pike Fessenden of Newton Center, became the bride of Calvin Powell Eldred, 3d, son of Mr. and Mrs. Calvin Powell Eldred of Dedham. The newlyweds will live in Portland, Maine. The bride attended the Erskine School and is a graduate of the Pierce Secretarial School, while the bridegroom is a graduate of Governor Dummer Academy and Dartmouth College with the class of 1937.

I had a most welcome and enjoyable phone call on the evening of the first Saturday in October from Phil Caldwell, I, in Pelham Manor, N.Y. He said that he and three other Beta fraternity brothers of mine were at his home with their wives, and he happened to remember that my birthday had just passed; so I talked one by one with the whole crowd. Included in the double quartet were Jim Campbell, I, and his wife — they were at our twenty-five year reunion, you remember. Phil works out of New York City for Roberts Paper Box Company, with an office at 420 Lexington Avenue, while Jim, you know, is of Eadie, Freund and Campbell, consulting engineers, 110 West 40th Street.

From O. W. Stewart, I, typical real friend of a Class Secretary through his nose for news, I have a splendid prospectus of Hodgman sprinkler systems, made by the Hodgman Manufacturing Company, Taunton, Mass., of which Bill Hodgman, II, is president. This company has risen rapidly in the field of sprinkler coverage, and O. W. says Bill works "very closely with the Factory Mutual laboratories in the development of some very fine fire-protective equipment." Probably the outstanding feature of Bill's system is the patented Hodgman bronze-beam link. Included in the far-flung coverage of Hodgman systems are some of the largest companies in the country, and if any of you have a sprinkler problem, just put it up to Bill (*adv.*).

A brother and sister were among the four winners of the largest number of awards this fall in the children's exhibit of flowers and vegetables, sponsored by Worcester County Horticultural Society: John D. Hassett, Jr., and Betty Hassett, children of John D. Hassett, V. John is state industrial health inspector here in Worcester. — At the annual golf tournament of the *Hotel and Restaurant News* at Poland Spring, Maine, in late September, Ken Faunce, VI, was prominent among the purveyors competing. Ken wields a mean mashie and is usually in among the prize winners. — Here are two lost sheep, if you please, for whom the Alumni Office has dug up addresses: George T. Garnsey, V, Care of St. Mary's Hospital, Mayaguez, Puerto Rico, and Edwin W. Goodwin, VI, 40 Park Avenue, New Rochelle, N.Y. Tom Haines, II, and his family have moved from Newtonville to 115 Dorset Road, Waban, Mass.

You can see from the foregoing that a few classmates have answered my appeal for letters, but many of you haven't for

lo! these many moons. It would surely gladden my heart if you'd beat the gun on New Year's resolutions and "write to Dennie" before January 1! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Worcester, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

1912

No news has come in during the month, but we have a request for an address: Adolph M. Eisenberg, our well-known orchestra leader, has disappeared. Can anyone give us his address? — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. MCGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 330 West 42d Street, New York, N.Y.

1914

The notes for the November issue were written last June before your Secretary left for Europe; thus quite a time gap has actually taken place between the preparation of notes appearing in these columns just one month apart. Although we were in Naples Harbor on the day before and on the actual day war was declared, there was never any real difficulty in returning home. Accompanied by Mrs. Richmond and our son and daughter, your Secretary spent a delightful summer in England, on the Continent, plus a venture into the Near East, which included Cairo, Jerusalem, and Damascus. While many military and naval preparations were observed and a few uncomfortable moments were spent in the Mediterranean region, we arrived back in the U.S.A. on September 18, exactly as scheduled and on the ship on which we had booked our passage.

We had one very pleasant and unexpected surprise. We had planned to visit Howell Taylor and his family at Beirut on the way back from Damascus. When our ship arrived at Beirut, we were met, as we were disembarking, by a messenger who had a letter from How saying that things were getting too hot in Syria and that he and his family were planning to take this same ship back to the United States. It was, accordingly, with great pleasure when we re-embarked that we found How with his wife and daughter on shipboard. How had been representing the Associated Press and doing some architectural and archeological work. He is still contemplating returning if foreign conditions straighten out within a reasonable length of time. Meanwhile he would appreciate hearing from any classmates at his temporary address of 1115 Woodlawn Avenue, Ann Arbor, Mich.

While in Paris we enjoyed a visit from Lester Forbes, who has been French representative of the Submarine Signal Company of Boston for a good many years. Remembering how both he and your Secretary enjoyed (?) the foreign-language requirements at Technology, it was very interesting to see the glib way in which Forbes now speaks French. One would think it was his native language. No word has been received from him since the declaration of war, but he was

planning to move his family into southern France should hostilities develop. He gave your Secretary a very interesting account of the mobilization of a year ago and of the evacuation of Paris at that time.

One news item, received from O. B. Denison '11 last spring, tells of the election of Arthur Johnson, purchasing agent for the State Mutual Life Assurance Company of Worcester, to the presidency of the Association of Insurance Company Buyers. This is a group composed of representatives of life, fire, and casualty companies. The *Worcester Gazette* of August 14 carried a picture of Johnson's attractive daughter, Barbara, who entered Bates College this fall. — Loyal '14 men still continue to send their sons to Technology in a goodly number. Six sons who entered this year are Ernest Charlton Crocker, Jr.; Seymour J. Spitz, Jr.; Edmund D. Hoyt, son of Albert J. Hoyt; Benjamin C. Muzzey, son of Clifford L. Muzzey; Sidney L. Hall, son of Leigh S. Hall of Concord, N.H., whose older son was graduated last year; and Robert H. Wheeler, son of Richard H. Wheeler, who died last spring. In addition to this group of freshmen your Secretary's records show that there are one senior, seven juniors, and two sophomores who are sons of classmates.

Where there is an automobile, look for Dean Fales. Not satisfied with the presidency of the Kennebunk Beach Chowder and Marching Club, Dean now appears as president of the Veteran Motor Car Club of America. On September 23 this organization held an exhibition and races at "Raceland," the race track of John R. Macomber '97 at Framingham, Mass. The Boston papers gave Dean and his new enterprise considerable publicity. Johnnie Leathers was also there in a very ancient chariot. Dean gave his annual talk on automobile trends on the evening of October 24 at the Engineers Club in Boston before the New England section of the Society of Automotive Engineers.

Although she was graduated with us, Marian Rice has always officially affiliated with the Class of 1913. As Mrs. Hart she has received considerable publicity in connection with her writings and sailing. The papers this summer featured her return from a 30,000-mile, three-year trip around the world in the 90-foot ketch *Vanora*. Mrs. Hart is quite a navigator in her own right, and her book, *Who Called That Lady a Skipper?* has had a large sale.

How many of us who knew Frederic H. Smyth as a student and who remembered him on the staff at Technology for three years after he received his doctorate in chemistry would ever expect that his present designation would be the Rev. Father Smyth, Superior. After being engaged in the field of chemistry Smyth decided to study theology and did so at the Chichester Theological College in England. He was ordained a priest there in 1932 and remained as a curate for three years, after which he returned to the United States. He is one of the founders of the Society of the Catholic Commonwealth, an organization of priests and

1914 Continued

laymen within the Episcopal Church. — A card from Frank Ahern from the state of Washington tells of his annual trip to the West Coast to inspect safety conditions in government parks. Your Secretary still thinks that Frank has the softest job of anyone in the Class. — H. B. RICHMOND, *Secretary*, General Radio Company, 30 State Street, Cambridge, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York, N.Y.

1915

boom! Boom!! BOOM!!! Only 190 days left to our Silver Reunion in June! We have already had the first general committee meeting in Boston, but no definite plans have yet been formed. You may be sure of a splendid party, but we need everyone's co-operation to make it a success and to establish an unapproachable attendance record. You will shortly receive your first blast of publicity. Incidentally, a ladies' committee has been formed to care for the special reception and entertainment of all ladies and their guests connected with the Class.

Time marches on! In this year's entering Class we have the following sons of 1915, with their daddies' names in parentheses: Eugene R. Eisenberg (Samuel S.), William R. Lacy (Clive W.), Richard S. Livermore (Joseph M.), and Eugene W. Place (Everett E.). Gene Place phoned me while he was in town entering his son at Tech and said that he and Herb Anderson are all set to serve as a Philadelphia committee for the coming reunion. Louie Young is now production manager at the Gillette Safety Razor Company in Boston and spent last summer in England visiting their plants. The new widely advertised Tech razor is a product of Louie's ingenuity. Louie and Henry Sheils will serve on the prizes committee, and, because of their originality, you know we can look forward to some good laughs.

After years of silence Bob Tiffany came to life with this letter from Winsted, Conn.: "... Just trying to raise wherewithal to keep up with three daughters and F.D.R.'s new taxes. Would be mighty glad to hear from you or from any of the old gang." It's nice to hear from Bob again. — Boots Malone writes from Stamford, Conn.: "... Expect to be with you next summer for the twenty-fifth. Stop off in Stamford sometime. Can find me at Norma-Hoffman Bearings Corporation, or home." — From the distant past comes a nice letter from Al Clarke: "... A quick response to your appeal is the least I can do to help make your job less arduous. ... I am in good health and keep busy. It is something of an effort to keep from acting younger than my age would warrant! Even though we don't hear often from all our classmates, friendship and loyalty like this are always a pleasure. — String Hill, in a letter from the National Fire Insurance Company of Hartford, Conn., makes a good suggestion, and at the reunion we will have an interesting and illuminating answer to it for you all! "... Probably there are many others who share my ex-

perience of a humdrum existence, in contrast to Jerry Coldwell, who seems to be tiring of commuting from coast to coast, or of our other classmate who has written and told us in such an interesting fashion of his experiences and life in Spain. It would be interesting to me, and possibly to other members of the Class, if you were to circulate a blank form which could be filled out by class members to give data as to where and by whom employed, nature of occupation, recreational inclinations, and perhaps other data which we might all complete and thus feel that we are 'helping Azel.' ..."

Last spring from 1758 Wendell Avenue, Schenectady, N.Y., good Phil Alger wrote the following interesting letter: "I appreciate very much your cordial invitation to the class party at the Statler on June 5. Although I do not now believe I can attend, I have passed the invitation on to my daughter, Augusta, who is a junior at Radcliffe College, urging her to attend in my place. ... I have continued to be occupied in general engineering work with the General Electric Company in Schenectady, promoting the development of still better and more numerous types of G.E. apparatus. Last summer I attended the I.E.C. Conference at Torquay, England, making first a brief visit to our associated companies on the Continent. I found the experience of meeting European engineers and seeing their conditions at first hand extremely interesting; and I can sympathize with the urge that leads so many travelers to write a book on any place they have visited for as long as a week. The high light of my journeying was a flight from Berlin to Milan over the Alps. This method of travel formed a striking contrast with the hand-cranked taxis and occasional horse-drawn vehicles prevalent in Milan. My wife and daughter joined me in England late in June, and we then had the pleasure of a 3,000-mile automobile trip through England and Scotland, visiting castles and cathedrals by the score. I was given very good advice on how to see England: 'Whenever you find a cathedral, look at it from the outside; whenever you find an inn, look at it from the inside.' We found, however, the inside of the cathedrals and the outside of the inns even more attractive than the reverse.

"As my daughter will graduate from Radcliffe in June and this coincides with my wife's twenty-fifth reunion at Radcliffe (you will remember her as Catharine E. Jackson) as well as with our own 25th reunion at Tech, we shall surely all be present in Cambridge a year from now. I shall look forward with much enthusiasm to this future meeting, and meanwhile I commission you to give my best regards to all of our classmates. ... — Phil did a little missionary work for us on the coast as the following letter from Earle W. Brown, of Oakland, Calif., testifies: "Hope the checks are falling in fast now. I keep forgetting to mail mine but due to the fact that I ran into Phil Alger in San Francisco the other day, I decided to make it a point to send you the two bucks."

Tom Huff has remained in the aircraft industry and is now production design engineer for Glenn F. Martin Company, Baltimore. His home address is Ruxton, Md. — Wayne Bradley writes from 89 Griffin Avenue, Bridgeport, Conn., that he will be glad to serve on the Connecticut committee and will do his best to make the Nutmeg delegation 100 per cent. — You will be reading these notes in December, so I am wishing you and your families all a pleasant and enjoyable Christmas, peace, plenty, and prosperity for 1940. — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline, Mass.

1916

Bob Wilson, who, as you know, is chairman of the board of the Pan American Petroleum and Transport Company, has been particularly active this fall. During October he spent two weeks before the Monopoly Committee in Washington, presenting the refining side of the petroleum industry as a representative of the American Petroleum Institute. On October 16 he had the pleasure of introducing Dr. Compton as the speaker of the evening at the annual dinner of the Society of Automotive Engineers. Bob was also planning to give a talk before the *Herald Tribune* Forum on the subject, "New Jobs for Petroleum." On November 11 he was awarded the 1939 Chemical Industry Medal of the Society of Chemical Industry for accomplishments in industrial chemistry and chemical engineering. The award was made at the Chemists' Club in New York City.

We learn that Richard Stewart Rowlett, known to most of us as Stew, is sales manager of the McLaurin-Jones Company of Brookfield, Mass., makers of gummed and coated papers and cloths — the oldest and largest manufacturers in this field in the world. For those who have not kept track of Stew's personal statistics, he is married to Helen L. Wyckoff and has three children, Thomas S., aged fourteen, Caroline W., aged twelve, and Jane S., aged eight. He lives at 47 Cherry Street, Spencer, Mass.

As these notes go to The Review, your Secretary is leaving for an extended trip to the West Coast, during which he expects to contact a number of classmates whose addresses show them to be along the trail he will follow. — JAMES A. BURBANK, *Secretary*, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, *Associate Secretary*, Coleman Brothers Corporation, 245 State Street, Boston, Mass.

1917

G. Radcliffe Stevens, together with Mrs. Stevens, son and daughter, dropped in at Cambridge late in June. The particular occasion — theoretically — was a food conference at the Institute, but on cross examination it developed that the family was on a six weeks' tour of interesting spots with Rad selling bottle-filling machines to any company that happened to be near their route. He is now vice-president of the Elgin Manufacturing Company, manufacturers of Elgin filling

1917 Continued

machines; has already succeeded in nearly doubling their output; and has acquired a part ownership in the company. Thus, he believes that he has found his proper setting. Rad's son expects to go to Tech, after which he will make bigger and better filling machines in father's plant. With Rad making filling machines, Howard Stewart in Worcester making labeling machines, and others making bottles, all that the rest of the Class need do is supply the materials to go in them.

Gus Pouchain and Mrs. Pouchain also appeared at the food conference and spent part of the time inspecting their Marblehead property which they have revamped into a home to which they may eventually retire when the cake business in Philadelphia no longer needs Gus's technical assistance. — Walt Whitman, one of the several peripatetic members of the Class, reports having seen Carl Dean in Akron at a technical meeting. His only comment of interest was that Carl had become most obviously bald headed and is thus joining the inner circle of the select. Walt saw Cornelius Coakley also and reports that he is now chief engineer for the National Aniline and Chemical Company at Buffalo. — Dick Leongard was in town on July 12, and tried to get in touch with several individuals but found most of them taking the day off.

Life recently honored Paul Gardner by devoting several pages to reproductions of pictures in his William Rockhill Nelson Gallery of Art at Kansas City. A highly favorable discussion of the history and development of the museum was given. — Also honored in print was Harold Neumann, general superintendent in charge of the operations of the Des Moines firm of Arthur H. Neumann and Bros., Inc., contractors on the magnificent home office for the new Bankers Life Building in Des Moines. Dutch is credited with having the idea for building the original kibitzers' grandstand for sidewalk superintendents. His was the idea duplicated with great acclaim in New York and even noticed recently in staid old Boston, where such a stand has been erected at the construction work on the site of the old Rogers Building.

Massachusetts papers reported in September the death of Jacob Story of the seventh generation of the shipbuilding family and proprietor of the shipyard in Essex bearing his name where sturdy fishing vessels have been laid down since 1668. He was a descendant of Mayflower stock, and his forebears first settled at Essex in 1636. His father, the late Arthur Dana Story, built the famous international racing fishing schooners, *Gertrude L. Thebaud*, *Columbia*, *Elsie*, and *Henry Ford*, among 400 other vessels, and the son had constructed some twenty craft since assuming charge of the yards after the death of his father in 1932.

Claude Roberts writes: "About a month ago, we moved down from San Marino, which is next door to Pasadena, to Palos Verdes Estates, which is on the coast between Long Beach and Santa Monica. If you know this country at all, you probably recall the Palos Verdes

Hills, which form a promontory, semi-suburban residential section, with all of the advantages of the seashore . . ." [Real estate sales talk deleted — *Secretaries*.]

In Chicago last November, at the American Petroleum Institute Convention, I saw a number of the boys — including Robert E. Wilson. I also took advantage of an evening with Penn Brooks, who has not changed a bit except for some wild gray hair and the addition of nigh on to a hundred pounds of bulk. — A small group of the Class gathered at Marblehead on the Saturday before Alumni Day: Jeff Tutein, Lucius Hill, I. B. Crosby, Judge Doon, Ray Blanchard, Kid Cochran, Walt Whitman, Monty Lovejoy, and half of the Class Secretariat. Dean Lobdell spent most of his time while there in the next room giving a formal address to the 1924 15-year reunion — which was also held at the Corinthian — reporting officially that the Cutler Crustacean Consumers, Ltd., and its subsidiary, Fundy Skyland, are doing well. These companies, it will be remembered, have an affiliation with the Gulf Coast Backlash Associates of Texas of which Bob Gay is either kingfish or grand white whale. (The titles in these piscatorial organizations are amphibian.) — RAYMOND STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass. PHILIP E. HULBURD, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N.H.

1918

Your Secretary is much ashamed of herself for not having notes in the last issue of *The Review*, but business had to come first. School opening is always a wild time with us at the Thomas School, as it is at every other school, and the million and one things that have to be done inside made it impossible to get much done outside. The following was seen in the *New York Times* of September 20, quoted from an article talking about the arrival of the *American Clipper* in New York: "Arriving on a stretcher as a passenger from Bermuda was Ernest Bridgewater, 40 years old, an employe of E. I. du Pont de Nemours & Co., Inc., of Wilmington, Del. Mr. Bridgewater had undergone an appendectomy while in Bermuda. He had been on the island a month with his wife and two daughters, who accompanied him on the flight. Mr. Bridgewater was met at the base by a private ambulance, which was to take him to Wilmington." — Here's hoping that you are well and strong again, Ernie, and that you are back on the job!

In the Butte, Mont., *Standard* of March 13 was the following: "Walter R. C. Russert, mining engineer, foreman of the Belmont mine of the Anaconda Copper Mining Company, Butte, has been elected secretary-treasurer of the Montana Alumni society of the Massachusetts Institute of Technology (Boston Tech)." The article goes on to give Walter's history since he went West in the early Twenties. Congratulations, and hope you do a good job! This is rather late reporting, but the news was forwarded to me only this summer.

The *New York Sun* of July 1, Sunday, had, in the radio section, a feature write-up concerning our classmate Albert Francis Murray. It seems that Dr. Murray has been doing a great deal of the work behind the scenes in the television field for Philco. In January, 1937, he made the first public showing of 441-line television at the Franklin Institute in Philadelphia. We quote: "At first thought, it would seem that Philco would be most interested in the development of television receivers, but Murray has also devoted no end of research to the problems of pickup and transmission. He developed a most efficient iconoscope camera tube, and once proudly remarked, 'It doesn't look like an iconoscope,' — so far was it removed from the standard camera tube. Only recently he has shown his improvements on cathode ray receiving tubes. He has developed a very compact and efficient camera and transmission unit, with which he travels about the country showing dealers what they may expect when television comes. As acting chairman of the RMA Television Committee he occupies what might be almost regarded as a key position in the matter of television standards. Murray is of the 'long pull' school of television experts. He is never getting ready for tomorrow or next week, but has, for instance, been working toward fitting all new automobiles with devices that will remove interference from that troublesome source. He will argue that if this work is now begun on all new automobiles, when television comes, old cars will have passed away, and at least one television problem will have been banished."

Am sorry to say that I have two deaths to announce in our columns this month: Frank W. Peers died on April 4, 1938, and Clarence D. Hart died on April 10 of this year. Last address for Frank Peers was New York City, and Dr. Hart was located with the city public health commission of Savannah, Ga.

Edward B. McCarthy has now had a major placed before his name; so new name and address follow: Major Edward B. McCarthy, Headquarters Third Military Area, 322 Railway Exchange Building, Denver, Colo. Now for a list of changes of address: John Bache-Wiig, 33 Cedar Street, Augusta, Maine; Chester C. Beach, 640 Main Street West, Rochester, N.Y.; Albert Berg, 12747 Promenade Street, Detroit, Mich.; Frank S. Boice, Empire Ranch, Sonoita, Ariz.; Harvey H. Brown, Jr., 1854 Union Commerce Building, Cleveland, Ohio; O. Donn Burton, 5515 Wissahickon Avenue, Philadelphia, Pa.; Philip M. Dinkins, 14 East 75th Street, New York City; Saxton W. Fletcher, 18 Dupont Avenue, White Plains, N.Y.; Stanley H. Franklin, 160 Centre Street, Rumford, R.I.; Dr. Douglas M. Gay, Carpenter Memorial Clinic, 1501 Van Buren Street, Wilmington, Del.; Giles D. Hulseman, 5455 Paseo Boulevard, Kansas City, Mo.; Joseph A. Kelley, Cities Service Oil Company, 70 Pine Street, New York City; Nathaniel Krass, Joseph W. Smith and Sons, 1115 Broadway, New York City; William F. Mc-

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Donald, 21 West Erie Street, Albany, N.Y.; Edwin M. McNally, The Barbasol Company, 846 North Senate Avenue, Indianapolis, Ind.; Reginald G. Musolino, 481½ Sanchez Street, San Francisco, Calif.; Aram G. Paul, 22-31 36th Street, Astoria, Long Island, N.Y.; Dr. Henry Pinkerton, Department of Pathology, St. Louis University, St. Louis, Mo.; Nathaniel A. Reinhertz, 3627 Irving Street, San Francisco, Calif.; Erskine H. Robertson, Robertson and Sons, Conde, S.D.; J. Everett Rowe, 62 Tisdale Road, Scarsdale, N.Y.; David N. Rubin, 4 Lawrence Road, Brookline, Mass.; Edward J. Shields, 12 Palfrey Street, Watertown, Mass.; Frederick B. Smith, Jr., Wolverine Warehouse Store, Inc., Franklin Road, Pontiac, Mich.; Major John A. Steere, Organized Reserves, Post Office Building, South Bend, Ind.

Well, your Secretary did get off on the tour of the country this summer after all, and as long as no one has given me any other news I feel I should let you know of the few I saw on the way West and East. Leaving Connecticut on the second of July, I headed southward into Virginia and from there northwest to Pittsburgh. From Pittsburgh, I covered about 430 miles to Chesterton, Ind., where I spent a couple of days with Dutch Seifert '19 and his wife. They are located on Highway 12 just about one mile from the dunes. In Chicago my headquarters were with my cousin, G. Wilbur Everett '08. I had dinner one evening in the Windy City with Al Sawyer, his wife, and young son. Young son was allowed to eat dinner with the family for the first time that evening; so it was a gala occasion. While in Chicago I telephoned the Van Kirk family and talked with Mrs. Van Kirk but did not have the opportunity to see them. I hoped to do this on my return from the West but was unable to reach them at that time.

Leaving Chicago about the middle of July, I went by train direct to Ogden, Utah, where I visited with the family of J. Worthen Proctor '17. When I arrived he was Captain Proctor but he received his majority during my visit. The Proctors are located at Ogden Ordnance Depot about five miles out of Ogden on the Salt Lake Road. It is pretty much a barren wilderness at their location, but the view of the mountains surrounding them is wonderful. From their front door you can look at Great Salt Lake in the distance. During my visit there I went over to Salt Lake City to see some old friends. I called up Mrs. Charles D. Smith (Sibyl Walker) and had the pleasure of having lunch with her one day. Sibyl is much the same as when in school. She has been around the Institute little since leaving and when she has been there has noted many changes. I tried to persuade her to plan on coming East for the reunion in 1943. I still have hopes that she may do so. How about it, Sibyl? I almost neglected to say that while in Salt Lake City I saw Walter H. Trask, Jr., '06.

Finally, on August 1, I headed northwest and joined a party from Chicago in Pocatello, Idaho. On we went to Port-

land, Ore., where we nearly sweltered in temperatures of 102 and 103 degrees, and then south along the coast to San Francisco. What a disappointment that city was to me! Along the coast all we heard was "this weather is most unusual." It certainly was something discouraging with four days of cold, bleak weather in the state where they say people go to be comfortable. The natives were all wearing fur coats, and we who had come from the East had to put on everything warm that we had and then pray that we would not catch cold. The Exposition was a great upset to my plans, as I went West with the idea that it was such a marvelous picture and so much better than the World's Fair in New York. It was a picture when lighted at night, but by day it was dull and dreary, most uncolorful.

After four days of cold weather and very little sun we headed south again to Los Angeles. There it was foggy until well into the afternoon of each day, with the result that I feel southern California is not what it is "cracked up to be." While there I had dinner with John Brown '00 and his wife, who are aunt and uncle of Mrs. Walter O. Wood, nee Margaret A. Curry '19. After a couple of days of this we went out to Riverside, to Mission Inn, and then onto the train for the East again. I saw my old friends again as I passed through Salt Lake and Ogden.

Leaving Chicago about the middle of August, I stopped with the Seifert family for a short time and headed East, stopping in Detroit, and then on to Buffalo, where I spent the night with the Flett family in Hamburg. Mike and Dorothy have their hands full with their two daughters, let me tell you. Then I crossed New York State and, stopping in Albany, visited Amy Walker. Some of you will remember her as the girl who was working on sardines in the food laboratory during the winter of 1917-1918. Finally after all this traveling I arrived on the East Coast in the latter part of August and returned to the job here at school the first of September. I consider it—all in all—a very nice summer.

Would the classmate who tried to reach me at my home in Milton, around the first of September, please make himself known? Mother says that she gave him my addresses and phone numbers, as he asked, but nary a word have I heard. I am in hopes that it was someone who wished to give me news for The Review. Please, fellow classmates, send in word of yourselves, your families, and of classmates. Merry, merry Christmas to you all! Happy New Year also! — GRETCHEN A. PALMER, Secretary, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

The following addresses have been received: Herbert W. Best, Shell Beach Road, Leetes Island, Guilford, Conn.; John J. Falkenberg, Apartment 105, 1020 Sherman Street, Denver, Colo.; Joseph E. Feinsilver, 46 Gardner Road, Brookline, Mass.; Conrad H. Hedin, 47 Madison Street, Belmont, Mass.; George B. Hirsch, 175 Benefit Street, Providence, R.I.;

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Eduardo E. Sarti, San Felipe, Guatemala, Central America; Jesse Stam, 17 Charlotte Road, Newton Center, Mass.; Lester Wolfe, R.F.D. Number 1, Springdale, Conn. — EUGENE R. SMOLEY, Secretary, 2 Fairmount Avenue, Hastings-on-Hudson, N.Y. GEORGE W. MCCREERY, Assistant Secretary, 275 Cypress Street, Newton Center, Mass.

1921

Little-known facts about the Great White City on the Charles: The phone book lists the addresses of some of the Institute's entries under Charles River Road and some under Memorial Drive, with a partiality for the former. Ordinarily this would provoke heated editorials in *The Tech* but, alas, the telephonic work of reference must have fallen from the newsroom's five-foot shelf.

Charles A. Williams, VI, has been elected treasurer of the United Illuminating Company, with headquarters in New Haven, Conn., and is now living at 181 East Rock Road in that city. Charlie was formerly rate engineer of the New England Power Association in Boston and has been active in the utility field since leaving the Institute in 1922 after teaching for a year following graduation. At that time he became associated with the Philadelphia Electric Company and then went to the Charles H. Tenney and Company of Boston where he remained until that organization was taken over by the New England Power. Charlie is married and has a son and daughter. We hear he has an imposing office in the new building which U.I. is constructing in New Haven, but he wasn't there the day we phoned to extend congratulations.

John G. Lee, II, withheld comments on his recent appointment as assistant director of research in charge of the technical branch of United Aircraft when we talked with him in Hartford, Conn., but thanks to Saint we have the story via the Hartford *Courant*. John has been closely identified with aviation since his graduate work in aeronautics at Technology, where he remained as instructor for a year after receiving his master's degree. He then joined the engineering staff of the Curtiss Aeroplane and Motor Company and subsequently served as project engineer for the Ford Motor Company on the design of the original Ford trimotor transport. Later he was also project engineer for the Fairchild Aviation Corporation. He has been associated with United Aircraft since 1932 when he became project engineer for the former Chance-Vought division and was identified with the design of many of the military types of aircraft furnished to the government.

John is vice-chairman of the New England section of the Society of Automotive Engineers and a member of the Institute of the Aeronautical Sciences, besides being chairman of the board of the Junior School of West Hartford. In 1926 he married Miss Percy Maxim, daughter of the late Hiram Percy Maxim '86. They

1921 Continued

live with their four children in Farmington, Conn. We have asked K. B. Warner to check whether there isn't another budding Tech Show playwright in the family.

John W. Barriger, 3d, XV, chief of the Reconstruction Finance Corporation's railroad division, 1825 H Street, N.W., Washington, D. C., was reported by *Railway Age* as a witness who testified before the Temporary National Economic Committee's hearing on saving and investment. John is reported to have presented a detailed exhibit on railroad sources of capital. — Chick Kurth, VI, reports a recent luncheon in Boston with G. Everett Farmer, VI, who is communication engineer for the Tennessee Valley Authority. Gef took Mrs. Farmer and the youngsters for a visit to his Cambridge home; we regret that he could not spare time for a stopover in New York on his return. The Farmers live at 25 Asbury Drive, Chattanooga, Tenn., and the family consists of two sons, aged ten and six, and a two-year-old daughter. — At Manchester, Conn., famous for Helen and Ray St. Laurent, X, you will find Ray sporting pictures of a 564-pound tuna which he brought in during a nine-hour layoff from his mink-farming hobby. California papers please copy for attention of Jackson W. Kendall, XV.

Webster W. Frymoyer, II, is general superintendent of the Foxboro Company, well-known instrument manufacturers of Foxboro Mass. Web was first with the Bureau of Standards and later became chief engineer of Foxboro. He is responsible for some of the unique developments in the instrument line, not only in the conventional types of recording and indicating devices but also in unusual applications of electronic methods for continuous check measurements of humidity, weight, thickness, and so on, of fast-moving materials in large-scale production. The Frymoyers live in Foxboro with their sons, aged seven and five, and a daughter, aged two. Web reports that he occasionally sees Ben Fisher, II, who is with the Kendall Company of Walpole, Mass.

Here's where those of the Class reporting new addresses can be found: Dr. Ivan F. Chambers, X, 509 Lore Avenue, Wilmington, Del.; Josiah D. Crosby, X, 25 Earle Road, Wellesley, Mass.; John H. Driggs, XV, Post Office Box 243, Wood, Wis.; Edouard N. Dube, I, 83 Prescott Street, Reading, Mass.; Thomas H. Gresham, XV, 2921 Seminary Avenue, Richmond, Va.; Mark V. Hamburger, X, 64 West 36th Street, New York, N.Y.; Captain John R. Hardin, I, Corps of Engineers, Office Chief of Engineers, Washington, D.C.; Donald H. Hatheway, VI, 24 Natalie Avenue, Melrose, Mass.; Sumner Hayward, X, 224 Richards Road, Ridgewood, N.J.; Frederick H. Hermann, VII, III, 837 Main Street, Melrose, Mass.; Eliot W. Higgins, II, 25 Prospect Place, New York, N.Y.; Charles L. Hutchings, 407 North Mission Drive, San Gabriel, Calif.; Irving D. Jakobson, XIII, 3 Madeline Place, Glen Cove, Long Island, N.Y.; C. Harry R. Johnson,

II, 217 South Macomb Street, Monroe, Mich.; Perley B. Kimball, VI, 282 Wilson Avenue, Rumford, R.I.; Commodore James L. King, II, 993 Memorial Drive, Cambridge, Mass.

Other new addresses include those of James LeGrand, I, 361 Warburton Avenue, Yonkers, N.Y.; Howard F. MacMillin, II, Post Office Box 175, Mount Gilead, Ohio; Captain Franklin Mitchell, X, Sperry Gyroscope Company, Brooklyn, N.Y.; Dr. Oscar F. Neitzke, X, 26 Jackson Heights, Waterville, Maine; Richard C. Poole, II, Frosted Foods Sales Corporation, 250 Park Avenue, New York, N.Y.; Commander Lawrence B. Richardson, XIII-A, Bureau of Aeronautics, Navy Department, Washington, D.C.; Sumner Schein, I, 64 Arlington Road, Brookline, Mass.; Saul M. Silverstein, X, 28 Stephen Street, Manchester, Conn.; Irving G. Smith, IV, 3210 N.E. 22d Avenue, Portland, Ore.; Lieutenant Colonel William A. Snow, I, Ordnance Chief of Engineers, Washington, D.C.; Joseph Wenick, X, 7 Gould Place, Caldwell, N.J.; David P. Wheatland, II, Physics Laboratory, Harvard University, Cambridge, Mass.; Frederick E. Whippley, X, 361 Austin Street, West Newton, Mass.

A real merry Christmas and a very happy New Year to you all! — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, International Telephone Development Company, Inc., 137 Varick Street, New York, N.Y.

1922

On August 24, James A. McDonald, XV, was married to Caroline Noonan in Cambridge. In September the engagement of Dorothy Durant of Somerville to Rupert S. Carven, Jr., XV, was announced. The big surprise of the year came with the announcement that, on September 1, James Alan Bowers, XIII, wed Marjorie Edge Reade of Glen Ridge, N.J., which town will be the present home of the Bowers family. Al is with the marine engineering firm of Gibbs and Cox of New York City.

General Electric has appointed G. R. Prout, VI-A, as manager of sales of industrial control equipment. Prior to September 1, George was acting manager of the industrial department of G. E. in the Southwest. He went to work with G. E. in Lynn in 1923. — Harold Judd Payne, X, has joined the staff of the F. W. Dodge Corporation as vice-president in charge of the magazine division. He will direct the magazines *Architectural Record* and *Real Estate Record*, and he becomes a member of the board of directors. In accepting this new position he resigned as executive vice-president of Associated Business Papers, Inc., and as secretary of the National Conference of Business Paper Editors. Payne started doing research work for General Electric upon graduation, after which he became identified with the McGraw-Hill Publishing Company and with many other groups specializing in promotion, advertising, and pub-

lic relations. During the National Recovery Administration he was executive secretary of the business magazine division of the Periodical Publishing Code Authority. — Lloyd E. Raymond, X, who resides at the University Club, Bridgeport, Conn., is this year's chairman of the Bridgeport chapter of the American Society for Metals. Raymond is metallurgist at Singer Manufacturing Company.

Carl J. Grip, X, is in the investment securities business with C. J. Grip and Company in Boston. He resides at 43 Walker Street, Newtonville, Mass., is married, and has three boys, aged three, ten, and twelve years. Carl recently heard from Hugh Chase and tells us that Hugh is located at Waycross, Ga. — Edward L. Lincoln, XV, is a roofing engineer and resides at 138 Pleasant Street, East Walpole, Mass. — R. S. Chatfield, IV, is construction engineer in the mortgage loan division of the Equitable Life Assurance Society of the United States in New York. — J. M. Cosgrove, XIV, writes from R. R. Number 3, Columbus, Ind., telling us nothing about himself but says he would like to hear from any of the gang. Will the gang please prevail on Joe to tell us of himself.

Platt C. Benedict, XII, geologist for the Newmont Mining Corporation, 14 Wall Street, New York, N.Y., writes pathetically: "Am in New York a few hours each year. Have spent most of my time in Canada since 1934, with a few months in the western states and a little time in Alaska and Mexico. Last couple of months I have been in Montana and Nevada. Have a grand family in Lynchburg, Va., but the kids are inclined to call me 'Mr.' when I show up for the Christmas holidays." — With the approach of winter all of our robust Class who are favorably located in the North begin to think of winter sports. So it is good to learn that Ted Elliott of Winchester, Mass., is still manufacturing skiing equipment which bears the trade name "Spearhead." If you use Spearhead and still come a cropper, it is your own fault and not that of the equipment, according to our best authorities. — Writing these class notes is a pleasure when the dope to write about is at hand, but it is an awful chore to invent the column out of whole cloth; so take pity on your Secretary by shooting in the news.

Arrangements have just been completed for an informal 1922 class dinner at the Technology Club in New York on Thursday, December 7. All members of the Class who can attend are invited to do so. Further details may be obtained from Bill Mueser of Moran, Proctor and Freeman, 420 Lexington Avenue, New York City, or from the Class Secretary. — CLAYTON D. GROVER, *Secretary*, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York, N.Y. C. YARDLEY CHITTICK, *Assistant Secretary*, 77 Franklin Street, Boston, Mass.

1923

This is the year that a new Register of Former Students is being prepared, for issue in 1940. As a result, more than the

usual information about what various members of the Class are doing should find its way to the Class Secretaries. Most of the items we have this month are passed along from the Alumni Office.

For example, Bob Hull reports that he has just recently been appointed New England division manager for Cities Service Oil Company. He is living in Wellesley, is married, and has two children. — Walter E. Richards reports that he is still stationed at Kelly Field, Texas, but that very shortly he expects to retire from the Air Corps of the United States Army. He says he will then be looking for a position, preferably in an executive or administrative capacity. He adds the interesting information that his 13-year-old daughter, Vera Almeda Richards, hopes to become a chemical engineer with a degree from the M.I.T.

Gordon W. Stuart, VI, of Aspinwall, Pa., died on June 8. The death of John E. Newell, XV, of Holliston, Mass., on June 14, 1924, has just been reported. Neither Stuart nor Newell was a graduate nor actively associated with alumni activities. — Pete Pennypacker contributes the news that Mr. and Mrs. John C. Sargent of Garden City, N.Y., announce the birth of a daughter, Nancy Jane, on August 8. Sargent is with the New York Telephone Company. — In response to my inquiry, Melvin C. Molstad reports: "I resigned my assistant professorship at Yale this summer to become associate professor in charge of chemical engineering at the University of Pennsylvania. Since graduation I've also been employed at Fixed Nitrogen Research Laboratory, Washington, D.C., and at the du Pont plant at Belle, W.Va." — HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree, Mass. JOHN M. KECK, *Assistant Secretary*, 441 Mount Prospect Avenue, Newark, N.J.

1925

We are indebted to Professor Locke '96 this month for the following item: "Horace T. Mann, Associated Professor of Petroleum Engineering at M.I.T., has been appointed professor of petroleum engineering at the Missouri School of Mines." Dr. Mann studied for his Sc.D. at the Institute, receiving the degree in 1925. The first term of the following school year he substituted for Professor Hutchinson '92, who was on leave of absence, a position for which his experience as an instructor at his alma mater, the Missouri School of Mines, had fitted him. Although he took his degree in metallurgy, his greatest interest was in petroleum; after Professor Hutchinson's return Dr. Mann went to Tulsa, Okla., where he worked for about a year and a half in the oil fields there. In 1928 he was appointed associate professor in charge of the option in petroleum production at the Institute, which position he held until the time of his present appointment. We trust that his return to the School of Mines at Rolla, Mo., will prove a lasting satisfaction to him; we can well imagine the pleasure with which he returns to his former school to take up his duties there.

Doc Foster, our Assistant Secretary, has been appointed to the Division of Industrial Co-operation at Technology. He was at first assistant to Charles L. Norton '93, but, upon the death of the latter, he was appointed assistant to Nathaniel McL. Sage '13, the director of the Division, meanwhile carrying on the remaining classes in his Course III work. At the conclusion of these he will devote his entire time to the D.I.C.

Hugh M. Henry briefly notifies us that he is in the mortgage loans department of George W. Warnecke Company, Inc., of Newark, N.J., being the manager of the New Jersey division of that company. — I have recently written Tom Price, at Erie, Pa., anent our reunion plans. In his reply he tells me that he has requested Hank Cunningham (43 Chestnut Street, Boston, Mass.) to assume the responsibility for keeping the Class informed of our plans. Hank, you will recall, was class secretary at the time of our very successful and enjoyable reunion in 1935, held at the New Ocean House in Swampscott. If our experience on that occasion is any indication, we may rest assured that next June's affair will be bigger and better than ever. If any of you have any ideas on this subject, please write to Hank or myself and let us know about them. Also, in the interval between the present and the time when the first notice arrives, talk up the reunion with any class members whom you may meet or with whom you correspond. I suggest that in every letter you write to a '25 man, you include the sentence: "See you next June at the reunion!"

Tom says he has seen Joe Russell several times since 1935, and the subject of a classbook has been discussed. It is suggested that we plan a mimeographed book, to be a feature of this year's reunion plans, with the idea that with that as a starter we can have a book in permanent form in 1945 or 1950, using the mimeographed publication as a nucleus. It will be of great assistance to us at headquarters if the rest of you class members will assemble all the information you can about others, some of whom may not get around to writing to us in the immediate future.

Two of our classmates died within two days of each other last March. On the eighth of that month Russ White of Glendale, Calif., passed away. On the tenth, Jim Finley, Jr., died. We were notified of Jim's death by his father. This sad news leads to the thought that we ought to include in our classbook a memorial section, containing biographical sketches of our deceased associates, as a tribute to their all-too-brief careers since graduation. — HOLLIS F. WARE, *General Secretary*, 3 Aquavia Road, Medford, Mass. F. LEROY FOSTER, *Assistant Secretary*, Room 6-202, M.I.T., Cambridge, Mass.

1926

On August 19 a fourth daughter, Judith Brown, was born to Mr. and Mrs. Eben B. Haskell, who live in Bedford, Mass. Eben is a district engineer for the New

England Power Association, with his headquarters at Lowell. — The Secretary received a letter recently from W. C. Sessions, who is with the Cleveland patent law firm of Richey and Watts and who seems to be thriving. — Among the callers in recent weeks whom the Secretary was disappointed to miss seeing was John E. Nicholas, who is professor of agricultural engineering at Pennsylvania State College.

John Longyear, who for ten years has been secretary of the Technology Club of Detroit, has recently been elected president, a recognition of the splendid work he has done in promoting the activities of this Technology club. — Albert Entwistle has moved from New Bedford, Mass., to Louisville, Ky. — The address of William Sackville is now the American Military Mission, American Embassy, Rio de Janeiro, Brazil. — Donald Welch has changed his home address from Buffalo, N.Y. to Kenmore, N.Y. — Y. Subba Row is instructor at the Harvard Medical School. — Willard Edwards of Fullerton, Calif., was a visitor to the Institute recently, having driven on from California during his vacation from the radio broadcasting station at which he works. — Howard Humphrey of the du Pont Rayon Division was another late summer visitor. — John Drum is active in the affairs of the Technology Club of Chicago.

During the summer the Secretary received the following letter from R. W. Plummer, who is with the Industrias Quimicas Argentinas "Duperial" in Buenos Aires: "I am sorry indeed to be writing you this letter because it contains nothing but bad news. Our fellow classmate, David M. Gordon, met with what proved to be a fatal automobile accident . . . the twenty-first of May on the road between the Standard Oil Refinery in Campana and Buenos Aires. It was a most ghastly affair, as he was alone at the time and was trapped in his car. Since it happened at eight Sunday morning, it was several hours before a car passed and came to his rescue, and it was due only to his blowing the horn continuously that these rescuers were attracted. By then it was too late to do anything, and he died shortly after noon that same day before his mother or sister was able to get to him from Buenos Aires. The funeral services were in Chacarita, Buenos Aires, on Monday, May 22. I have written his good friend and classmate Walter Lobo, and I mentioned that I was writing you in order that you would put a suitable notice in the class notes. . . . Other than this no personal notes are going forward to the States. Meanwhile if you will circulate this letter to Professor Locke '96 I am sure he will see that it gets to the professors of what used to be Course III₂ who knew Dave. Sometime I will sit down and write you some happier news. Since I saw you in October, I have been to Canada, England, and back here to Argentina with a stopover in Brazil." — All members of the Class who knew David Gordon will be saddened by this news.

1926 Continued

George Smith has reported that Ronald Martin is now with the Pacific Mills at Dover, N.H., his title being maintenance engineer. The physics laboratory at South Carolina A. and M. College is in charge of P. V. Jewell. — J. RHYNE KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge, Mass.

1927

Prime news of the month is that Joe Hammond has, at long last, deserted the ranks of bachelorhood. Following closely on the heels of the announcement of the engagement came word that on October 7 Miss Hilda Williams Payson of Brookline and Joseph William Hammond were married. Mrs. Hammond is a graduate of the Beaver Country Day School and the Boston School of Occupational Therapy. — Emory Patterson is chief engineer with the Builders Steel Products Corporation, with business address of 233 Broadway, New York City. His home address is 23 Meadowbrook Village, Plainfield, N.J.

George Taminosian, apparently dissatisfied with what Tech had to offer, started all over again, according to reports, and was graduated last June from Boston University with the degree of master of arts. His major field was economics. I quote Tam's remarks on this latest adventure: "For years I have been wishing that I had taken Course XV, so that I could understand better the workings of the economic system. Now that I have a master's degree in economics, I find that the workings of the economic system are more of a mystery to me than ever before."

C. William Rados is manager of the Kelvinator National Salesmen's Institute, Detroit, Mich., and is living at 815 Madison Avenue, Birmingham, Mich. He has given a broad invitation to local or traveling M.I.T. men, '27 men especially, to stop in and see him whenever in Detroit. — Bob Bonnar, who is still with General Dye Stuff Corporation in New York, planned to arrange a dinner for the New York group sometime in the latter part of November. Probably the dinner will have been held by the time this column is published. However, it is expected that there will be other dinner meetings in New York this winter, and any '27 men in this vicinity are urged to contact Bob or your correspondent to be sure of information concerning future get-togethers. The two we had last year were so enjoyable that there was a spontaneous desire to have them again this year, and a pleasant evening with old friends from the Institute is yours for the asking. — RAYMOND F. HIBBERT, *General Secretary*, Care of Johns-Manville Corporation, 22 East 40th Street, New York, N.Y. DWIGHT C. ARNOLD, *Assistant Secretary*, Arnold-Copeland Company, Inc., 222 Summer Street, Boston, Mass.

1928

From Al Gracia, 1639 Ohio Street, Cuyahoga Falls, Ohio, came the following interesting letter: "It isn't very often that I'm moved sufficiently to sit down and write a letter. But last September, I

had the good fortune of meeting some of the '28 men I hadn't seen since graduation, and it was a decidedly pleasant experience. The American Chemical Society met in Boston and it was like a homecoming for those of us from the Institute. With the rush of activities I didn't have half enough time really to visit with the fellows. Had a chat with Jim Donovan, who seems quite unchanged by the years — as friendly and spontaneous as ever. As you may know he is in business for himself and is doing right well. More power to him! Saw Phil Taylor just long enough to ascertain his whereabouts. He looks to be the same Phil. Gordon Collins was at the meeting also, and I saw him just long enough to meet his charming wife and to learn that a baby boy had arrived at their house seven weeks before. It took Gordon a long time to succumb to the attractions of matrimony, but he was vulnerable, as are we all. Only with some, it's hard to find that Achilles' heel.

"Not at the meeting but at his attractive home, I spent a very pleasant evening with Art Nichols. He was out here in Akron with us for a year or two but then went back to Waltham to enter his father's business. Art has built in Weston, Mass., and is thoroughly domesticated, with three children and a capable, talented wife. I called at the Institute to see Ralph Joep but missed him, as he happened to be in New York that week end. Our Akron contingent is well split up at the present time. Bud Reynolds is 'way down under' for Goodyear. He is superintendent at the Australian plant. Twisty Malmquist is in Sweden at present, in charge of technical service at the new plant at Norrköping. Bus Ruch is no longer with Goodyear; I understand he is now teaching at California Institute of Technology. As for your correspondent — things go very well. There are four of us now: Judith arrived two years ago, Janet five years ago. I'm still putting forth my efforts in the field of chemical engineering development at Goodyear. We have bought a home and have become quite undistinguishable from native Ohioans. Only a broad *a* and a slighted *r* now and then serve to set us apart. Best of luck to you and to all."

Bud Budlong, at 1503 Third Street, Peru, Ill., has advised us that his former concern, the Western Clock Company, is now the Westclox division of General Time Instrument Corporation. Bud's family includes a boy and girl. — Congratulations to our author Parker Morrell on his interesting yarn, "The Money Pit," which appeared in the October 14 issue of the *Saturday Evening Post*. — In the technical press our tenth-reunion chairman, Bob Harris, has been covering himself with honors with his reports of original research on vitamins and nutritional biochemistry. — GEORGE I. CHATFIELD, *General Secretary*, 6 Alben Street, Winchester, Mass.

1929

Now that summer is past and we have more time indoors, the chances are that some members of the Class may respond to

our ten years of prompting and give us such a letter as Arthur Marsh wrote last summer from England. The ten-year reunion should be a stimulus to more material for these columns.

The news of the month in Akron is somewhat arithmetical: We have one addition to our '29 Akron roster, Ted Ewald, XV, who is now working for the B. F. Goodrich Rubber Company (he and I are going to get together one of these days, and I will let you know the details later); one subtraction, Hank Gibbons, II, who has left the Goodyear Zeppelin Corporation and has moved his family to Stratford, Conn., where he is now busier than a bee at his new job of stress analyst for Vought-Sikorsky; and one multiplication by marriage, involving John J. Hartz, X, who on October 14 espoused Miss Marjorie Bierce of suburban Tallmadge, Ohio. Johnny is now connected with our Goodyear plant in Godsden, Ala. After the wedding John was seen headed in that general direction, and no doubt Mr. and Mrs. Hartz are at home in that Alabama city.

Apparently Dick Boyer, VIII, was not going to let us in on his recent marriage and we had to pick up information from the news clipping services. The story is that M. Richard Boyer married Miss Dorothy Chadwick of Maple Hill, Newburgh, N.Y., on May 20. Dick is with the du Pont Film Manufacturing Company, and the couple are living in New Brunswick, N.J. — Also from the news clipping services we learn of the marriage of Emmanuel Hershberg, X, to Miss Charlotte Task of Stoughton, Mass., on August 6. Hash received his doctorate at M.I.T. in 1933 and has studied at Zurich, Switzerland. He is now a research fellow in chemistry at Harvard University. — Carl Schesch, XVI, married Miss Elizabeth Yassin of Boston on July 2.

In the *Engineering News-Record* marketplace issue of May 25 we read of Hunter Rouse's appointment as professor of hydraulics at the college of engineering at the University of Iowa. Hunter will also be consulting engineer to the Iowa Institute of Hydraulic Research. Hunter is certainly getting places in the field of hydraulics, and we extend our hearty congratulations on the latest achievement. — The Alumni Office informs us that C. Fayette Taylor, XVI, was one of several staff members who represented the Institute at the fourteenth annual inspection of laboratories of the National Advisory Committee for Aeronautics at Langley Field on May 2.

From the Course VI-A *News* we learn that Austin Fribance is an instructor in the electrical department of the Rochester Athenaeum and Mechanics Institute and is the author of an article in the March *Rochester Engineer* on the subject of "Technical Instruction on an Individual Basis." — EARL W. GLEN, *General Secretary*, Box 178, Fairlawn, Ohio.

1930

We have just learned that John Garcia, III, was married last May to Miss Virginia B. Swanstrom. — Al Bird, XIII, is

1930 Continued

passing out cigars to everyone in Washington in honor of a baby daughter, Cynthia, who was born in September, according to Evers Burtner '15. — By the time you read these notes Carlton Vanderwarker, X, will have been married to Miss Lenore Buckley of Chicago. They will make their home in Atlanta, Ga. — Fred Dickerman, XVI, who has recently been named visiting member of Harvard University's new graduate department of aeronautical engineering, is working as an aeronautical engineer with Vought-Sikorsky Aircraft in Hartford.

Your Secretary is having a great time this fall combining shipbuilding with the construction of a new home in Hingham, and hopes that members of the Class will visit and pass judgment upon the latter or, at least, will give the letter slot plenty of use. — Don't forget to save June 1 and 2 for our ten-year reunion! Suggestions as to the possible scene of the reunion will be most welcome, as will any other ideas you wish to send along. — PARKER H. STARRATT, *General Secretary*, Bradley Park Drive, Hingham, Mass.

1932

Last May your Secretary changed his job and moved back to New Jersey. I find the test development work in the inspection department of Bakelite very interesting, though quite different from motion-picture processing.

Adnan Halet Taspinar, known to us as Adnan Ahmed Halet, wrote to Professor Jackson in May, and the latter kindly passed on to us some of the interesting things Adnan has accomplished. For a year or two Adnan taught mechanical engineering subjects at Robert College in Istanbul, Turkey, and at the Military School for Advanced Applications of Science. In the summer of 1933 he was appointed director of the technical department of state tobacco monopoly, in 1934 was made director of the tobacco factories department of the tobacco monopoly, and in 1935 became general manager of the tobacco monopoly. In 1938 Adnan made a trip through central Europe, particularly Germany, as a member of the Turkish mission for commercial negotiations. This year he has been appointed general manager of the state monopolies of Turkey. These monopolies cover tobacco, alcoholic drinks, salt, and explosives, and the administration is one of the biggest financial and industrial establishments of Turkey, with an annual turnover of about two hundred million dollars. Adnan has done considerable writing in the period since he was our fellow student. His books are on applied mechanics, applied thermodynamics, hydraulic machinery, automotive vehicles, steam boilers, hoisting and conveying machines, power-plant design, and the like, plus a German-Turkish technical dictionary. Some of these books have not yet been published.

Bob Sample is to be congratulated on his promotion to assistant development director of the Monsanto Chemical Company. From a clipping from their house organ we learn that Bob has been with

Monsanto since receiving his master's degree in 1933. From chemist in the research laboratories at St. Louis Plant A he was promoted to pilot-plant work and later was placed in charge of that department. His headquarters in this new position will be in the general offices in St. Louis. — Bob Butler has been promoted from instructor to assistant professor of geology at Lehigh University. Another assistant professor from our ranks is Rolf Eliassen. His appointment is in sanitary engineering at the Armour Institute of Technology.

From four of our Class we have notes that I will quote directly: Howard A. Kinzer: "Have worked for the Burlington Railroad since January, 1934, in traffic, transportation, and engineering departments, stationed at Kansas City and Chicago, except while with an engineering party in Quincy, Ill., and central Missouri. Was appointed live-stock agent for the road at the Union Stock Yards, Chicago, in March of this year. Unmarried. Live at 4140 Drexel Boulevard, Chicago." — From Jacob Millman: "Received a traveling fellowship from M.I.T. and spent a year (1932-1933) at the University of Munich in Germany. Returned to M.I.T. and obtained the doctorate in physics in 1935. Was assistant in the Physics Department of M.I.T. for one term after graduation and then obtained an instructorship in electrical engineering at the College of the City of New York. Have been there since then. Married, October, 1936." — From James J. Robson: "Tire-development engineer for Firestone Tire and Rubber Company, Akron. Married, May 28, 1938, to Winifred Sanders of Los Angeles, Calif." — From Joseph L. Thistle: "Manufacturers' representative. Married Marian Johnson of Washington, Pa., August 31, 1935. A daughter, Barbara Ann, born February 7, 1937; a son, Johnson Logan, born June 24. Present and permanent address: 535 Westover Road, Pittsburgh, 16, Pa."

We will wind up these notes with the recording of four marriages: Christian Grosser and Miss Virginia Irving Herr of Cheshire, Conn., were married in June. In West Hartford, Conn., John Gibson married Miss Jetta Coughlin in July. The couple live at 31 Owen Street, Hartford. In Chambly Canton, Province of Quebec, Canada, this June, Gardner H. Prescott married Miss Isabel Macdonald. The couple went to England for their wedding trip and are now living in Chambly Canton. Frederick J. Eimert was married last May to Dorothy L. Anderson of Somerville and is now engaged as a consulting engineer with the Barber-Colman Company of Rockford, Ill., in the development of industrial controls. — CLARENCE M. CHASE, JR., *General Secretary*, 1207 West 7th Street, Plainfield, N.J. CARROLL L. WILSON, *Assistant Secretary*, Research Corporation, 137 Newbury Street, Boston, Mass.

1933

First, marriages: A note from Bill Miller says his sister Elizabeth was married to John D. Collins on June 17. — George

R. Churchill and Miss Charlotte Cook were married on June 10 and will live in South Hingham, Mass. — Mal Mayer was married to Miss Eleanor S. Schwarz of Newton, Mass., on June 30. — Miss Eunice Cook was the bride of Francis J. Safford on July 19. — Ed Goodridge married Miss Isabel Cleveland on August 26. — Bill Harper took as his bride Miss Madeline D. Morse and is now living at 1213 Beacon Street, Brookline, Mass. — Edward Hillenbrand married Miss Florence L. Watson on June 15 in Charleston, W.Va. — Fred Ladd writes that he was married to Miss Margery Kilbourn on June 3 and that he is living at 12 Curtis Street, West Somerville, Mass. Mrs. Ladd is the sister of Bill Kilbourn. Fred is working at Reece Buttonhole Machine Company. — Miss Louise M. Robbins became the bride of Bryce T. Lyall on September 25. — Walter MacCormack was married in Stamford to Miss Eleanor Mathieson on August 26. — Roy D. Hall, Jr., in the same month married Miss Dorothy H. Wheldon. — And Fred Murphy was married in October to Miss Anne M. Doyle of Roslindale, Mass.

Second, engagements: Douglas Stewart is engaged to Miss Louise Wurts of Paterson, N.J., and probably will be married by the time this is in print. — Miss Elizabeth Forsyth's forthcoming marriage to Ralph L. Garrett has been announced.

The following clipping was sent to us by John Stiles, associate professor of electrical engineering at Clarkson College, and came from the Clarkson *Integrator* of May 24: "The most popular prof was chosen to be Jess Davis while the new E. E. Prof. Record was second." Mr. Stiles mentioned in his note that Frank Record's "success both technically and personally has been exceptional." We appreciate Professor Stiles's courtesy and are proud of this report. — A note from Bill Miller says he is now in Philadelphia (4715 Comly Street) as a rating examiner in the district office of the United States Civil Service Commission. — Here are a few excerpts from a letter from Walter Swanton (Room 225, New Fowler Building, Centralia, Ill.): "Since last fall, I have been moving around a great deal, as men in the oil business are wont to do: three months in northern Louisiana, one month in Houston, two months in southwestern Texas, and the Illinois area for a little over a month. Core Laboratories, as its name implies, is an oil-field service organization which maintains a fleet of portable laboratories for making core analyses right at the well. From our analyses we can determine the productive characteristics of each foot of sand from which cores are obtained and thereby give the operator valuable information for use in completing his well. While in Houston, I had a couple of visits with Preben Oldenberg, who, as you may know, is with the Standard Oil of Texas and the proud father of a baby girl."

Dominic J. Chiminiello, XIV, is now manager of Fenwal, Inc., in Ashland, Mass. He tells us that Bill Murphy is now a second lieutenant, Corps of Engineers, United States Army, and that Don Brook-

1933 Continued

field is directing the gold-plating room of the Gillette Safety Razor Company in South Boston. — Frank Hall, Jr., has accepted a position of instructor in electrical engineering at Pennsylvania State College. He formerly worked with Western Electric at Kearny, N.J. — Theron C. Johnson who has been with G.E. since graduation, has now gone through the advanced course and is in charge of it. — Bill Huston is in Seattle, still working with the Oxford Group. — William P. DeCamp, Jr., is with the Peter Gray Corporation, Cambridge, as superintendent. They manufacture pressed-metal and sheet-metal products. William is married and has two daughters, Anne and Lois.

Morris N. Green is with the Illinois State Health Department as senior serologist — his special duties being to conduct research in the serology of syphilis, a "most fascinating disease from the chemical standpoint which I am investigating." He says, too, that as yet no especial maiden has charmed him sufficiently for him to capitulate to marriage. From Morris we learn that Philip J. Coffey is "also here in Chicago working very valiantly for the United States Public Health Service in the capacity of a sanitary engineer. He sort of oscillates between some Indian reservations and the Great Lakes, bringing the benefits of modern sanitary science to mankind, one of our unsung heroes." — Here's a merry Christmas to you all and a prosperous New Year! (Your Secretary wouldn't mind being overworked in 1940.) — GEORGE HENNING, JR., *General Secretary*, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn, N.Y. ROBERT M. KIMBALL, *Assistant Secretary*, Room 3-102, M.I.T., Cambridge, Mass.

COURSE V

It has been over five years since news of the Course appeared in these columns. An *ad hoc* hypothesis would be that the Course Secretary fell into an abandoned coal mine down in West Virginia. In any even your correspondent, whose hazards are mainly cows, has news of most everyone who received the B.S. degree in chemistry in 1933. — William B. Adams, Jr. (John E. Cain Company, 187 Vassar Street, Cambridge, Mass.), never did get out of sight of the Institute. This is understandable, for it was there that he achieved his greatest triumph; I well recall the day he astounded Barker '30 and Toone '28 by presenting them with a bottomless beaker to account for the fact that his yield of hexylresorcinol was so low. Bill spent a year in the analytical labs at the Institute, then became chief chemist with the John E. Cain Company, makers of Cain's Mastermixt mayonnaise and other food products, several of which Bill has developed. I see Bill quite often. He is not married yet but is becoming entangled with a nurse from Newburyport, the old home town.

Alfred Peter Bruce, he of the droopy pipe, paunch, and electric trains (all at 520 West 218th Street, New York City), wangled a job with the National Recov-

ery Administration in 1933. When this showed signs of folding, he transferred to the Resettlement Administration and, for a time, lived in New Haven, Conn., but more of the time in Washington, D.C. For the past two years he has been with Dun and Bradstreet in New York. To Alfred go the honors for the most complete renunciation of chemistry. My wife and I visited him in Gloucester a couple of summers ago and had a chance to confirm our suspicion that he really is nautical. — Irving Crane (1 Braeburn Road, East Milton, Mass.) stayed on at the Institute in a variety of assistantships and received his Ph.D. in inorganic in 1936. Since then he has been with the Atlantic Research Associates, a subsidiary of a large dairy firm, with labs located in Newton. We see Irv quite a bit at the local American Chemical Society meetings in Boston. We didn't see him at the recent national meeting there, but we understand that he was working on Sundays that week.

Charles E. Cullison (Colonial Beacon Oil Company, Everett, Mass.) is a guy who can always be seen at Alumni Day festivities in June. I well recall one such occasion when Adams and I lured Cullison out to Fenway Park, then watched him sleep while Joe Cronin hit a grand slam in the last of the ninth. — Melville Ehrlich (244 Loring Avenue, Buffalo, N.Y.) received his M.S. degree in 1934, then spent four years with the National Aniline and Chemical Company in Buffalo. I last saw Mel at the Milwaukee American Chemical Society meeting in September, 1938. I just have a letter from him saying that this past winter he has been teaching chemistry and physics in a vocational high school in Buffalo and likes the work very much. This past month he has had a tough battle with a ruptured appendix which the doctors say burst at the very hour that Hitler marched into Poland. September 2 was also his fifth wedding anniversary.

Although we haven't heard from him this year, we are pretty sure that Michael Eitelman is still with the National Aniline and Chemical Company in Buffalo. We think his home address is 173 Long Avenue, Hamburg, N.Y. Mike was the fellow who determined the density of CO₂ to the umpteenth decimal place by staying up all night, so that his bleary eyes couldn't look straight into a cathetometer. I last saw Mike in Rochester in the fall of 1937.

We now come to George Frank Garcelon (1010 North Third Street, Reading, Pa.) once the scourge of the freshman wrestling team and proponent of all the beauty which Springfield had to offer. George has been in Reading since 1935 with the Althouse Chemical Company, makers of dyestuffs. The plant manager is none other than Otto Putnam, XIV. I stayed overnight with George in the fall of 1936, and we drove to Pittsburgh together (you guessed it — for another A.C.S. meeting). At that time George orated on the local feminine talent and apparently convinced himself, for last year he married a local belle. — His old

friends would hardly recognize Maurice George Green, otherwise known as Ga-reen, for the lad now weighs about 220 pounds and smokes cigars in a manner which rivals that of the late H.W.U. George has been employed since graduation by the Atlantic Electrical Supply Company, Inc., 117 Mechanic Street, Worcester, Mass. This is not surprising when you know that his brother owns the business. (His brother, incidentally, is also a Course V product.) George's chemistry does him some good as a reserve officer in the Chemical Warfare Service. A letter just received (on green stationery) states in regard to his marital status: "We are in a buyer's market, and I don't expect to go off the deep end just yet." Perhaps not, George, but you do go on cruises to Bermuda.

Robert Heggie stayed on at the Institute longer than any of us. He received his Ph.D. in 1936, then for three years served as a research associate in vitamin work. Bob joined the American Chicle Company last June and can be reached at 2517 82d Street, Jackson Heights, N.Y. During his stay at the Institute, Heggie earned quite a reputation as a skipper in the dinghy races, once almost getting lost in Marblehead Harbor during Race Week. — Benjamin Herlich (13 Brimblecom Street, Lynn, Mass.) has spent most of the last five years at the Flash Chemical Company in Cambridge. He left the company for a time to take Civilian Conservation Corps duty as a reserve officer in North Adams, Mass. Ben is married and has a new baby girl.

Jacob Kaplan (10 Fessenden Street, Mattapan, Mass.), who did a thesis on corrosion inhibitors and then got a job as chemist for Ben-Burke, Inc., distillers, is, at last report, making good use of his talents. Kappy is quite proud of his apricot brandy, and this, says Green, shows how biased the guy is. When you see that glorious colored advertising in *Esquire*, think of Kaplan. — Gilbert W. King is back at Tech this year in the physical chemistry labs. After receiving his Ph.D., King must have done some traveling, for his address card shows addresses in California and New Haven. I think I saw King last Memorial Day skiing in Tuckerman's Ravine in New Hampshire. I had on dark glasses and he, nothing but pants and skis, so I guess each of us was somewhat doubtful as to the other's identity. — Earle D. McLeod worked for a couple of years with the Pacific Mills in Lawrence after leaving Tech. During that time he acquired a wife and started raising a family. He is now with the Arnold Hoffman and Company, makers of textile specialties in Providence. I saw quite a bit of Mac at the recent A.C.S. meeting in Boston. — William Moran (459 East Main Street, Somerville, N.J.) sends a card saying he is with the vat dyestuffs department of the Calco Chemical Company in Bound Brook, N.J. Bill just returned from a three weeks' auto trip to California.

Globe-trotter's honors go to Peter Parker, whose present whereabouts is unknown, but who can be reached via

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225 Salem End Road, Framingham, Mass. Peter spent his first year as an alumnus in California and subsequent years in Manila, Shanghai, and Paris. He claims he was studying. Last fall he returned to Boston and taught at a private school for boys. I saw Peter and wife quite often last winter at the local A.C.S. meetings. This summer we know he was at the University of Chicago, but then we lost track of him. Judging from past performance he will probably show up in some odd spot. — Harry Steinman has not been heard from since he left Cambridge. I sent him a card several months ago but received no reply. The only address we have is 29 Cooper Street, Trenton, N.J. — Last and least we come to our noble Course Secretary, Edward F. Hillenbrand, Jr. It is known that he went to work with Carbide and Carbon Chemicals Corporation at one of their Charleston, W.Va., plants. I think he is still there. McLeod recently told me that Ed never writes letters, not even to his brothers in Phi Mu Delta. All of which reminds me of the famous remark made by Professor Breed '93: "If he has no friends, has he no fraternity brothers?" — Your correspondent, Edward R. Atkinson, stayed at the Institute, acquiring a wife in 1935 and a Ph.D. in 1936. He then went to Trinity College in Hartford, Conn., as an instructor. After a very enjoyable two years (even though sharing an office with a physical chemist from Princeton) he moved to the University of New Hampshire in Durham, where he now is an assistant professor, teaching advanced organic and related subjects. He has time in which to take advantage of the fact that Boston is only 65 miles distant. You who are more remote from New England are to be pitied, or are you? — EDWARD R. ATKINSON, *Secretary pro tem*, University of New Hampshire, Durham, N.H.

1934

A belated note from Constant Chase, who is secretary of the Technology Club of Panama, brings news of some of the boys in the Canal Zone: John J. M. Carey, who is located in Garun, married Grace D. Jones of Ancon, Canal Zone, on July 11, 1937, and they now have a son, John, Jr., born on October 31, 1938. Are you teaching him to lead with his left, Johnny? — Earl K. Murphy married Miss Sheridan Mason of Oakland, Calif., on October 16, 1937. They live in Pedro Miguel. — Constant Chase and Miss Frederica Olsson of Belmont, Mass., were married on July 5, 1935. Their daughter, Carole, was born on December 1, 1936. — I am sure it is not too late for us to offer our congratulations.

A note from Max Winer informs us that he is now second lieutenant in ordnance, assigned to research at Springfield Armory, Springfield, Mass. His present capacity is assistant to the research director, handling problems in connection with materials and metallurgical processes of treatment of alloys. He is still single (temporarily, at least). His plans are to concentrate in the field of ordnance

engineering, in which he will be active either in a military or in a civilian status. Max reports that on a trip to Boston he ran into Ralph Marotta, who is holding down a job as research chemist for the Merrimac Chemical Company, Everett, Mass.

Foster R. Jackson, IV, is assistant director of the department of interior decorating at the Modern School of Applied Art in Boston. — Our society column presents a few notes of interest. The engagement of Miss Elizabeth Emery, daughter of Mr. and Mrs. Arthur C. West of Needham, to Reginald Geddes Murdoch has been announced. Nice going Rex! — Mr. and Mrs. Walter Bixby have announced the engagement of their daughter Leonora Marie to James A. Sweeney. Jim is now working for a naval architect in New York. — On June 25, Daniel Smith was married to Miss Matilda S. Rosenfeld, daughter of Mr. and Mrs. William Rosenfeld of Roxbury. The couple took a wedding trip to Mexico and are now residing in New York.

When the day is done, fellows, and you are sitting at home in front of the embers of a dying fire, look deep down into the coals and remember your poor struggling Secretary, crying for news from you. Then take up your penknife, sharpen the point of your quill pen, and dash off a few lines about where you are and what you are doing. It will be appreciated. — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Copper Company, Chuquicamata, Chile, South America.

1935

Nelson Thorp is now the proud father of two children. I believe we reported the first, Sandra, some time ago. The new arrival has been named Neil and was born last September. — Utley Smith, who is now employed by Johns-Manville Corporation in Washington, D.C., took Miss Madeline Goodhue as his bride on September 9. John Tebbetts, who was best man at the affair, should have weddings down pat now, for just a week after Utley's wedding, John married Miss Lucille Scudder of Whitman, Mass. The same goes for Utley, who returned the honor when he was best man for John. If they were efficiency engineers, they would have made it a double wedding and saved time. On August 12 John Taplin and Miss Virginia Baldwin of Wellesley were married. — Prescott Smith and Miss Eloise Melville have announced their engagement. By the time this issue of *The Review* reaches you, they will be man and wife. Pete Grant finally succumbed to the wiles of Miss Jane Sephens last September 18. Pete Johnston was one of the ushers.

Karl Achterkirchen has returned to his home in Washington, D.C., after having been in San Diego for some time. Bissell Alderman has been appointed to the instructing staff of the University of Washington, Seattle, in the department of architecture. Tony Dauphine completed his work at M.I.T. and is now

with Standard Oil of California in San Francisco. John Quinn has also joined Standard Oil of California and located in Richmond, Calif. Hobart French, Jr., is now at the University of Rochester in their Institute of Optics. Harold Heiser has been transferred by the Navy to the Bureau of Construction and Repair in Washington, D.C. Bob Kulp has left Coatesville, Pa., and is now in Canton, Ohio. Joe Lancor is now with Sperry Gyroscope in Brooklyn, N.Y. Charlie Perry is working for United States Industrial Chemicals, Inc., in Baltimore, Md. A change-of-address notice which came through for Larry Stone gave Springfield, Mass., as the new location and the prefix lieutenant on the name. Looks as though Larry has joined the Army and is at the Springfield Armory. George Valley, who was at the University of Rochester, is now back in Cambridge.

The first week of October there was a meeting in New York City of the Classes of '34, '35, and '36. It was a very dry affair, but all seemed to enjoy meeting again after the summer. Representing '35 were Bill Brockett, Carl Boytano, Jack Orchard, Otto Zwanzig, Gregg Fry, Johnny Demo, Hal Everett, and your Secretary. Bits of news picked up there include the transfer of Dick Shaw from one job to another. He is now reported to be with the Arthur Machine Screw Company. Earle Megathlin is working for Farrel-Birmingham Company in Ansonia, Conn. Charlie Smith has left the Chemical Engineering Practice School in Buffalo for a job with Standard Development Company in Elizabeth, N.J. Clyde Leavitt, who was with Pennsylvania Shipyards, Inc., is now with Ingalls Shipbuilding Corporation in Pascagoula, Miss. Ed Helwith, who is married, is holding down a swivel chair in the Switchgear division of General Electric in Philadelphia. Fred Tone, formerly with Bendix, is now chief engineer and an owner of Kalva Venders, Inc., of Chicago. He has been responsible for the design of the company's products — slot-machine dispensers of milk drinks. Pat Patitz is still burning up the roads for Foster-Wheeler Corporation. Whit Stueck has, I hear, left the Mystic Shipyards, Inc., to organize his own shipbuilding outfit in Saybrook, Conn. Charlie Bowen is married — no details.

Now for the surprise of the month. If it were not for the fact that your Secretary has an unusually strong constitution, he would undoubtedly be cutting out paper dolls in a booby hatch as a result of severe shock. Bud Pflanz performed a major miracle by starting a round-robin letter and then forwarding the results — eight lengthy epistles, no less, from the old dormitory gang. We'll start off with Bud's own contribution: "I started my career as a safety engineer for the Liberty Mutual Insurance Company and was located in New York. In the same outfit were Judd Briefer and Wally Byrne. . . . After eighteen months of this I transferred to the valuation department of the Cities Service

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1935 Continued

Company. However, the Congress of the United States passed the holding-company act which did away with holding companies, and in the process of reorganization, a service company called Electric Advisers, Inc., was organized. My department makes valuations, sets up plant ledgers for public utilities, and does time studies on pipe-line construction, electric-power transmission systems, and the like. The head of my department is a consulting engineer in his own right; so in addition to working on Cities Service properties, we occasionally do a valuation for outside concerns. I was in Oklahoma from October, 1937, to April, 1938, working on a valuation of the Empire Pipe Line Company, a concern transporting oil through about 900 miles of pipe line. From May, 1938, to August, 1938, I was in Chicago, where I worked on a valuation of the Natural Gas Pipe Line Company of America, which company transports gas from Texas to Chicago through a 24-inch pipe. From September, 1938, to the present time (this November) I have been in Bristol, Tenn.-Va. (on the state lines) and am helping to set up a plant ledger for the East Tennessee Light and Power Company. We have to make a field inventory of all the physical property of the company and have been traveling about Tennessee doing it. My present duties are to take inventory on the electric-power wiring and the switching equipment of the substations. Any tall steel substation structure is my office and a convenient girder acts as my desk — when my knee gets tired holding my data board or when I am using said knee to cling to the structure. The work is interesting and I like it immensely. I stay in a town just about long enough to make a few friends and then move on. In a way I consider it a privilege to see what God's country looks like. No, I'm not married or engaged. Was in Boston a year ago August and met Stocky. Stayed with Leo Epstein a few nights and he and I had some good times visiting some of the old hot spots of Bean Town. . . . A dozen orchids to Mr. Pflanz.

The next letter of the group is from Don Gittens: "Hi, stooges! I'm still working for the Arma Engineering Company as per graduation. We have been going full blast ever since the start of the present naval program, and my nose is wearing pretty thin on the old grindstone in the guise of development engineer. My job is to follow our products through the engineering and design stages and then to try to make the stuff work after it has been built. I have also been traveling around on installation work and consequently have seen a good deal of the Navy. The best break I've had so far was a trip to the Panama Canal Zone where I was stationed from October to December [1938]. I was sent down via a United Fruit Line cruise, stopping to take in the sights at Havana and Port Limón, Costa Rica. I camped at the Washington Hotel in Colon and worked with the submarine division at Coco Solo. We had a lot of our equipment down there, and I was sent down as a guarantee engineer. Conse-

quently I spent most of my time living on submarines, and I am proud to state that I amassed over a hundred hours submerged in the briny deep, which fact, according to the officers, makes me a qualified submariner. The only Tech man I met in my travels was Eastman '26, who had been sent down by the Standard Oil Company for six months. I made several futile attempts to ferret out some other grads, but they apparently hung out in different clubs. There is a great deal of social life down there, and with the contacts I made in the Navy, I found myself getting around a good bit and taking in the night life for which the zone is noted. It is unbearably hot during the day; so the custom seems to consist of sleeping during the afternoons and playing most of the night, with a few hours early in the morning for business. The naval base is on the Atlantic side of the isthmus, and I cruised around as Uncle Sam's guest in the Pacific. Thus I went through the canal an average of twice a week and found it so interesting that I never failed to experience a new thrill during a passage. I got home again just in time for Christmas (1938) with a coat of tan, an album of photographs, and a propensity for boring people with talk of my experiences. Yes, I'm engaged to a gal from the home town. It happened on the day of the hurricane — everything happens to Gittens. (Since Don wrote this letter he was married to Josephine Bokros on September 9 in Roselle, N.J.) It was her philosophy that "all Tech men are crazy" which turned the trick. I ran into Bill Grosser, Bill Rothen, and Paul Germond at the Tech Club affair at the P.O.N. brewery — and was it a swell affair! Grosser is with the Federal Shipbuilding and Dry Dock Company in New York City, and he is working with George Morrisette on ship design. Rothen is with a pharmaceutical outfit in Passaic. . . . A good many of us envy Don's good luck on getting around to see some interesting sights. [The Editors are holding the rest for the next issue because of restricted space.] — ROBERT J. GRANBERG, *General Secretary*, Care of W. C. Voss, 9 Old Town Road, Wellesley Farms, Mass. RICHARD LAWRENCE, *Assistant Secretary*, 111 Waban Hill Road North, Chestnut Hill, Mass.

1938

We are slipping badly, for in this issue we cannot claim a single bit of news that came to us through the mail from farther away than Cambridge — and these notes were written in Boston. Things do happen around here once in a while, however; so we have some notes for this issue. Future issues will depend upon the kindness of those of you who can find time to write us a line.

On Friday, September 29, John Argersinger was married to Miss Mary Elizabeth Beers of Tacoma, Wash. They are to make their home in Worcester, Mass. — Saturday, October 7, saw Bruce Old, who received his doctor's degree last June, married to Miss Katharine G. Day of Newton. The Olds plan to live in Beth-

lehem, Pa. — We have also been informed that Francis Buffington was married last August to Miss Marjorie Hills of Belmont, and they are now living in Boston.

As for engagements: Don Weir recently became engaged to Miss Bets Wonderlee (Wellesley '39) of Philadelphia. Announced last summer was the engagement of Gordon Foote to Miss Esther McCall of Greenwich, Conn. Incidentally, Gordon, John Mahoney, and Jeanne Kitenplon (our only coed to return to the Institute) recently passed preliminary exams for their doctors' degrees in chemistry. Dave Torrans, X, passed his last spring, and we understand that Frank Gardner, VIII, is in the midst of his. Well, more power to them! They certainly must have absorbed plenty of knowledge, and we should drink a toast to their durability!

Among others still at the Institute are Peer Cody, X (who is dividing his time between teaching at Northeastern and studying at Tech), and Dave Acker, X, who is continuing his investigation of how individual drops of fuel burn in a furnace. At the Graduate House are to be found Jim Longwell, IX-B, and Fred Reuter, VIII, who is working hard to finish his master's thesis. — Dick Muther, XV, is back from Tech in Turkey and has his name on a door at the Institute, where he's assisting Professor Fernstrom '10 and working for a master's degree in his spare time. — Leon Baral, X, is working at the Institute on a special research problem; Dave Beaman, II, is around, but our investigations have not disclosed his objectives.

Boston, and more particularly the Phi Kappa Sigma founders' day celebration, was recently honored by a visit from Archie Main, XIII. Archie is now with Gibbs and Cox and is at present working on the design of an army transport — the first ship of its kind ever to be built in this country. Bob Eddy has been sent to the Newport News Shipbuilding and Dry Dock Corporation by the United Fruit Company, for some practical experience in ship construction. — Wendell Calkins, who has been with the Bath Iron Works, passed through Boston early in the fall on his way to the rain and fog of his native California (hi, Skip!). — Ira Lohman, VI, came to Boston to relax from his arduous duties with Jackson and Moreland in Allentown, Pa., and Bert Grosselfinger, X, also came North to relax (at Jake Wirth's, or so the story goes). Al Wilson, XV, augmented the crowd by appearing from Bethlehem, Pa., where he has been learning the ins and outs of the steel industry.

Dave Irving, XVI, who is now with Budd, was expected to tour these parts in November. Dave is responsible for the stress analysis for the "Bolt of Lightning" that was at last report *still* standing in front of the General Electric Building at the World's Fair. — It has been rumored that Doc Thompson, I, is in Boston with Liberty Mutual and that his side-kick, Bill Preece, XV, has become a banker in New Bedford!

1938 Continued

A few people have left this district, among them Harry Hollander, V, who has gone to New York. Harry was with Filene's, but he's now with an advertising agency in New York. Incidentally, Harry was living with Bob Johnson, XV, Walt Blake '37, and Bob Casselman '39 at Shangri La (2 Sedgewick Road, Cambridge), and your Assistant Secretary can vouch that they have given more than one very enjoyable cocktail party! — Art Gould has left Congoleum-Nairn to go with the Army and is now stationed at the Cleveland Arsenal as assistant production manager. — Harry Phinzy, XVI, is on the West Coast working night and day designing planes for Lockheed. — Frank Atwater, XV, is with Fafnir Bearings in New Britain, Conn.

Dan Suter, XV, has written (but not to your Secretaries) that he's with Defender Photo Supply Company, Rochester, N.Y., working in all phases of industrial engineering but concentrating on motion study and job-evaluation plans. He states that one should not believe all that is heard about Course XV's being a "bull" course. Dan adds that he's been engaged since August 5 to Verna Post of Rochester, and expects to be married shortly. He added that Bill Beye was in Rochester over Labor Day on vacation from his job in the test house at Pratt and Whitney. He went back to take a new job as test engineer with the Hamilton Standard Propeller Company, another division of United Aircraft.

Fred Lamb reports that he is writing his M.S. thesis in electrical engineering while working for Socony-Vacuum Oil Company in Boston as a general engineer in operations and distribution of oil and associated products. — J. Jan Jansen is on the technical staff at the Bell Telephone Laboratories in New York, working on television transmission developments. — We hear from Shih Pai that he is going back to China this fall to the aeronautical engineering department of the National C. University at Chungking. — We again acknowledge our indebtedness to Fred Kolb, who must know the right people or something — for he's a virtual storehouse of news! — DALE F. MORGAN, *General Secretary*, 6 Avon Road, New Rochelle, N.Y. LLOYD BERGESON, *Assistant Secretary*, 885 Beacon Street, Newton Centre, Mass.

1939

The news is beginning to roll in a little faster now that some of our more illustrious classmates are starting to make industrial history, but anything further will be very welcome. A reminder of the latest addresses of some of the Course Secretaries may provide the necessary stimulation: Course I, Willard Babcock, 21 Orient Avenue, Newton Centre; II, Oswald Stewart, 2d, 2 South Cliff Street, Ansonia, Conn.; III, Will Jamison, Rose Fountain Farm, Greensburg, Pa.; IV, Thomas Akin, Jr., 63 Burbank Street, Boston; V, Peter Bernays, 810 South

Third Street, Champaign, Ill.; VI, Joseph Mazur, 152 South Broadway, White Plains, N.Y.; VI-A, David Frankel, 216 Ingleside Avenue, Worcester, Mass.; VI-C, Walter Halstead, Electrical Engineering Department, Ohio State University, Columbus, Ohio; and VII, Arthur Grossman, 37 Putnam Street, Somerville, Mass. The rest will follow in a later edition.

Will Jamison tells us that he is "having a swell time, working very hard as a kind of roving center for two coal companies. Have gone up in the world, as I am chief engineer for a third company that we are just starting and have not named as yet." Signed: W.B.J., chief engineer, "X" Coal Company. — Dave Frankel writes: "For my present term of co-operative work, I have been sent by the long-lines department of the American Telephone and Telegraph to the telephone repeater station at Stamford, Conn. The general business boom has been felt by Course VI-A, and nearly every man has been assigned to co-operative work. General Electric alone has taken over thirty men, including Mason, Hal Chestnut, and Bill Smith. As for myself, I've just arrived at Stamford and it's too early to describe either the town or my work. Things look fine on first impression."

Pete Bernays, V, writes that Ruth Berman is working at the Harvard Medical School, having been on a volunteer basis this summer but now fortunately ensconced in a salaried position. Johnny Carter, when last heard from, was on his way to California prior to starting work with the Standard Oil Company of California. Continuing from Pete's letter: "Bill Davis is still in Boston, working as an analyst for the Liberty Mutual Life Insurance Company. Jim Schulman, who is still at M.I.T., teaching with Tommy Gibb, wrote me that he had seen Bill several times. Ed Rittner is back to the wars taking a minor in metallography. He is teaching nights in some school of podiatry. . . . Smitty (Maynard E. Smith) has now assumed Charlie Cole's post and is a setter-upper of lecture experiments. Phil Lucas has been working for Dr. Clapp but not permanently."

Dave Mullin, also V, is with Carter's Ink and has recently completed six weeks of training in the plant. About himself Pete Bernays writes: "I am set up as a proctor of the Phi Beta Delta house at the University of Illinois. I am taking full graduate work, but a lot of my time goes to help the freshmen with chem and math." T. A. Welton, VIII, is also at Illinois teaching physics.

In an interesting letter from Fred Cooke, XV, he reports: "I came here to Pittsburgh to work on July 5 and was immediately placed in the industrial engineering department of the Edgar Thomson Works of the Carnegie-Illinois Steel Corporation, where I stayed six weeks. Although at the present time I am out in the mill for an eight weeks' observation and training course, I am to return

to the industrial engineering department when this is finished." Bob Touzalin, II, is also with the same company, in their training course. — Charlie MacKinnon, XIV, writes that he is enjoying his work in Niagara Falls with the R. and H. chemical department of du Pont. Also there are Bob Wooster, X, and Budd Venable, X.

Monarch Cutler, VIII, recently paid a visit to The Review Office and reported that he is with the Parade of Progress sponsored by General Motors. This is a small edition of G.M.'s World's Fair exhibit — diorama, panorama, and science lectures — which is touring the continent (American, to be sure), illustrating connections between industry and research. Our representative is one of eight who are delivering lectures, and he has been to Toronto, New York, and many points in the South. He will continue his travels during the winter.

From the Press Clipping Service we discover much activity among the more romantically inclined of our members. Maynard Drury, XV, became engaged to Miss Kitty Fiske of Providence, the engagement being announced at a tea at the Fiskes' summer home on the Cape on September 9. The Class scores again with the announcement of the engagement of Charles S. Mercer, XIV, to Miss Louise Hedlund, daughter of Oscar Hedlund. This engagement was announced on September 16. Miss Florence Hausman of Chestnut Hill, Mass., became the bride of Dick Kauffman, IX-A, early this summer, at a ceremony which took place near Boston.

On September 1 the marriage of Miss Julia Gray of New York and Middletown Springs, Vt., to Harold Butler, II, took place in the Congregational Church at Middletown Springs. The couple are now living at Hudson View Gardens, New York City. The engagement of Miss Carol Nottage to Al Sargent, Jr., XV, was announced early in September. Miss Nottage was graduated from Radcliffe College and lives in West Medford.

Peg Whitcomb, IX-A, not content with a mere four years, has been elected a research assistant in meteorology at the Institute and will also work for an advanced degree. — Don Timbie, VI-A, has started in his position as an instructor at Andover. He is teaching mathematics but will not lose sight of his electrical knowledge. — Johnny Alexander, XVI, reports that he is now working at Wright Field, Dayton, Ohio, "pushing a slide rule for the most part," but enjoying life nevertheless. — Gordie Pope, XV, is working in Buenos Aires in cost estimating and plant erection.

There's still quite a bit of news to report, but space prevents, not to mention the prospect of needing news for another issue. — STUART PAIGE, *General Secretary*, Box 207, Greenwich, Conn. MORRIS E. NICHOLSON, *Assistant Secretary*, M.I.T. Graduate House, Cambridge, Mass.



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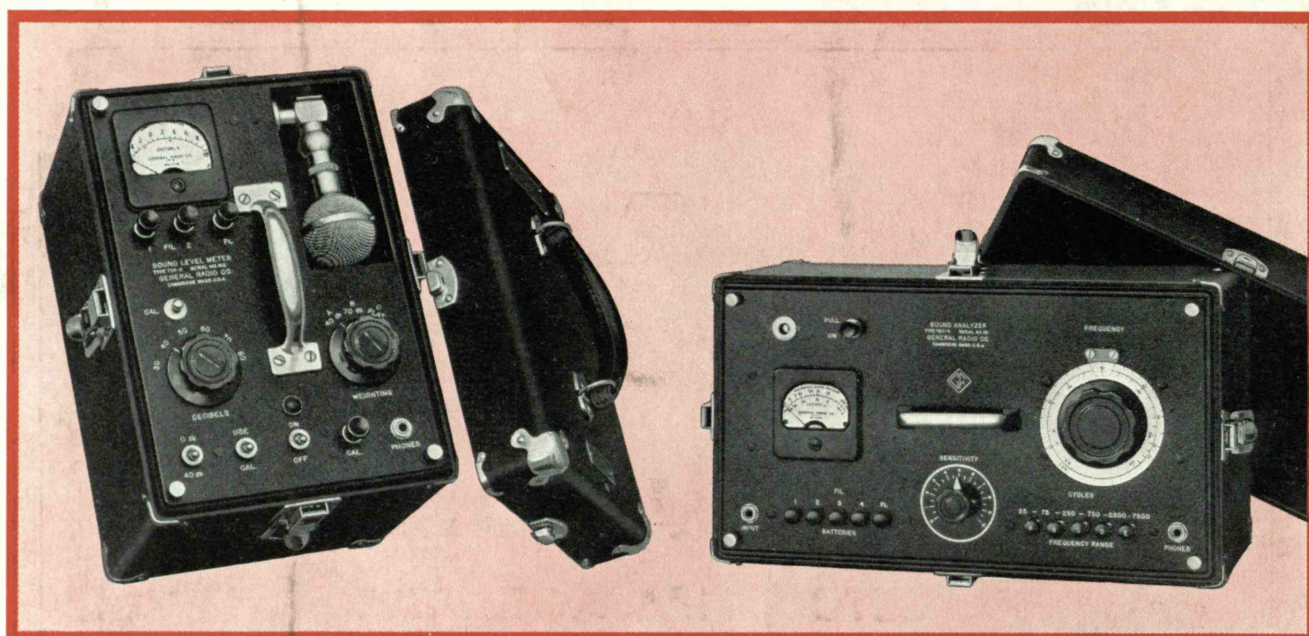
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